

The HOMFLY Braidor Algebra - Braidor Computations

First Load "Programs"!

The "Exponential" Solution:

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{R3[B[0]], R3[B[1]], R3[Append[B[1], 0]]}
{ASeries[3, 0], ASeries[3, 0, 0], ASeries[3, 0, 0, -x^2 P[{1, 3, 2}] + x^2 P[{2, 1, 3}]]}

d = 2; d2inv[d, Last[R3[Append[B[d - 1], 0]]]]
1/3 x P[{1, 2}, 1] - 1/3 x P[{1, 2}, 2]

d = 2; B[d] = Append[B[d - 1],
  x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]
ASeries[2, P[{2, 1}], x P[{1, 2}], 1/2 x^2 P[{2, 1}] - 1/3 x P[{1, 2}, 1] + 1/3 x P[{1, 2}, 2]]

d = 2; R3[Append[B[d], 0]]
ASeries[3, 0, 0, 0, 0]

d = 3; B[d] = Append[B[d - 1],
  x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]
ASeries[2, P[{2, 1}], x P[{1, 2}],
  1/2 x^2 P[{2, 1}] - 1/3 x P[{1, 2}, 1] + 1/3 x P[{1, 2}, 2], 1/6 x^3 P[{1, 2}]]

d = 3; R3[Append[B[d], 0]]
ASeries[3, 0, 0, 0, 0, 1/18 x^4 P[{1, 3, 2}] + 1/18 x^4 P[{2, 1, 3}] -
  1/9 x^4 P[{3, 2, 1}] - 1/3 x^3 P[{1, 2, 3}, 1] + 1/3 x^3 P[{1, 2, 3}, 2] + 1/9 x^3 P[{2, 3, 1}, 2] -
  1/9 x^3 P[{2, 3, 1}, 3] + 2/9 x^3 P[{3, 1, 2}, 1] - 2/9 x^3 P[{3, 1, 2}, 2] +
  1/9 x^2 P[{1, 3, 2}, 1, 1] - 1/9 x^2 P[{1, 3, 2}, 1, 2] - 1/9 x^2 P[{1, 3, 2}, 1, 3] +
  1/9 x^2 P[{1, 3, 2}, 2, 2] - 1/9 x^2 P[{1, 3, 2}, 2, 3] + 1/9 x^2 P[{1, 3, 2}, 3, 3] -
  1/9 x^2 P[{2, 1, 3}, 1, 1] + 1/9 x^2 P[{2, 1, 3}, 1, 2] + 1/9 x^2 P[{2, 1, 3}, 1, 3] -
  1/9 x^2 P[{2, 1, 3}, 2, 2] + 1/9 x^2 P[{2, 1, 3}, 2, 3] - 1/9 x^2 P[{2, 1, 3}, 3, 3]]

```

d = 3; d3[R3[Append[B[d], 0]] // Last]

0

d = 4; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], x P[{1, 2}], $\frac{1}{2} x^2 P[{2, 1}] - \frac{1}{3} x P[{1, 2}, 1] + \frac{1}{3} x P[{1, 2}, 2],$
 $\frac{1}{6} x^3 P[{1, 2}], \frac{1}{24} x^4 P[{2, 1}] - \frac{13}{90} x^3 P[{1, 2}, 1] + \frac{13}{90} x^3 P[{1, 2}, 2] -$
 $\frac{1}{9} x^2 P[{2, 1}, 1, 1] + \frac{1}{9} x^2 P[{2, 1}, 1, 2] + \frac{1}{45} x P[{1, 2}, 1, 1, 1] -$
 $\frac{1}{15} x P[{1, 2}, 1, 1, 2] + \frac{1}{15} x P[{1, 2}, 1, 2, 2] - \frac{1}{45} x P[{1, 2}, 2, 2, 2]$]

d = 4; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0, 0, 0]

d = 5; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], x P[{1, 2}], $\frac{1}{2} x^2 P[{2, 1}] - \frac{1}{3} x P[{1, 2}, 1] + \frac{1}{3} x P[{1, 2}, 2],$
 $\frac{1}{6} x^3 P[{1, 2}], \frac{1}{24} x^4 P[{2, 1}] - \frac{13}{90} x^3 P[{1, 2}, 1] + \frac{13}{90} x^3 P[{1, 2}, 2] -$
 $\frac{1}{9} x^2 P[{2, 1}, 1, 1] + \frac{1}{9} x^2 P[{2, 1}, 1, 2] + \frac{1}{45} x P[{1, 2}, 1, 1, 1] -$
 $\frac{1}{15} x P[{1, 2}, 1, 1, 2] + \frac{1}{15} x P[{1, 2}, 1, 2, 2] - \frac{1}{45} x P[{1, 2}, 2, 2, 2], \frac{1}{120} x^5 P[{1, 2}]]]$

d = 5; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0, 0, 0,

$$\begin{aligned}
& -\frac{11}{360} x^6 P[\{1, 3, 2\}] - \frac{1}{40} x^6 P[\{2, 1, 3\}] + \frac{1}{18} x^6 P[\{3, 2, 1\}] + \frac{1}{30} x^5 P[\{1, 2, 3\}, 1] - \\
& \frac{29}{270} x^5 P[\{1, 2, 3\}, 2] + \frac{2}{27} x^5 P[\{1, 2, 3\}, 3] - \frac{2}{45} x^5 P[\{2, 3, 1\}, 1] + \frac{29}{270} x^5 P[\{2, 3, 1\}, 2] - \\
& \frac{17}{270} x^5 P[\{2, 3, 1\}, 3] + \frac{1}{45} x^5 P[\{3, 1, 2\}, 1] - \frac{1}{45} x^5 P[\{3, 1, 2\}, 2] - \\
& \frac{1}{18} x^4 P[\{1, 3, 2\}, 1, 1] + \frac{23}{270} x^4 P[\{1, 3, 2\}, 1, 2] + \frac{7}{270} x^4 P[\{1, 3, 2\}, 1, 3] - \\
& \frac{1}{18} x^4 P[\{1, 3, 2\}, 2, 2] + \frac{7}{270} x^4 P[\{1, 3, 2\}, 2, 3] - \frac{7}{270} x^4 P[\{1, 3, 2\}, 3, 3] + \\
& \frac{1}{90} x^4 P[\{2, 1, 3\}, 1, 1] - \frac{11}{270} x^4 P[\{2, 1, 3\}, 1, 2] + \frac{1}{54} x^4 P[\{2, 1, 3\}, 1, 3] + \\
& \frac{11}{270} x^4 P[\{2, 1, 3\}, 2, 2] - \frac{11}{270} x^4 P[\{2, 1, 3\}, 2, 3] + \frac{1}{90} x^4 P[\{2, 1, 3\}, 3, 3] + \\
& \frac{2}{135} x^4 P[\{3, 2, 1\}, 1, 1] - \frac{8}{135} x^4 P[\{3, 2, 1\}, 1, 2] + \frac{4}{135} x^4 P[\{3, 2, 1\}, 1, 3] + \\
& \frac{4}{45} x^4 P[\{3, 2, 1\}, 2, 2] - \frac{16}{135} x^4 P[\{3, 2, 1\}, 2, 3] + \frac{2}{45} x^4 P[\{3, 2, 1\}, 3, 3] + \\
& \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 1, 1] - \frac{16}{135} x^3 P[\{1, 2, 3\}, 1, 1, 2] - \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 1, 3] + \\
& \frac{4}{27} x^3 P[\{1, 2, 3\}, 1, 2, 2] - \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 2, 3] + \frac{4}{45} x^3 P[\{1, 2, 3\}, 1, 3, 3] - \\
& \frac{2}{27} x^3 P[\{1, 2, 3\}, 2, 2, 2] + \frac{2}{27} x^3 P[\{1, 2, 3\}, 2, 2, 3] - \frac{2}{45} x^3 P[\{1, 2, 3\}, 2, 3, 3] - \\
& \frac{2}{135} x^3 P[\{1, 2, 3\}, 3, 3, 3] - \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 1, 2] + \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 1, 3] + \\
& \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 2, 2] - \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 3, 3] - \frac{4}{135} x^3 P[\{2, 3, 1\}, 2, 2, 2] + \\
& \frac{2}{27} x^3 P[\{2, 3, 1\}, 2, 2, 3] - \frac{2}{27} x^3 P[\{2, 3, 1\}, 2, 3, 3] + \frac{4}{135} x^3 P[\{2, 3, 1\}, 3, 3, 3] - \\
& \frac{2}{45} x^3 P[\{3, 1, 2\}, 1, 1, 1] + \frac{2}{27} x^3 P[\{3, 1, 2\}, 1, 1, 2] + \frac{8}{135} x^3 P[\{3, 1, 2\}, 1, 1, 3] - \\
& \frac{2}{27} x^3 P[\{3, 1, 2\}, 1, 2, 2] - \frac{8}{135} x^3 P[\{3, 1, 2\}, 1, 3, 3] + \frac{2}{45} x^3 P[\{3, 1, 2\}, 2, 2, 2] - \\
& \frac{8}{135} x^3 P[\{3, 1, 2\}, 2, 2, 3] + \frac{8}{135} x^3 P[\{3, 1, 2\}, 2, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 1] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 2] + \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 3] - \\
& \frac{2}{45} x^2 P[\{1, 3, 2\}, 1, 1, 2, 2] - \frac{2}{45} x^2 P[\{1, 3, 2\}, 1, 1, 3, 3] + \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 2, 2, 2] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 3, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 2, 2, 2, 2] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 2, 2, 2, 3] - \frac{2}{45} x^2 P[\{1, 3, 2\}, 2, 2, 3, 3] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 2, 3, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 3, 3, 3, 3] + \\
& \frac{2}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 1] - \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 3] + \frac{2}{45} x^2 P[\{2, 1, 3\}, 1, 1, 2, 2] + \\
& \frac{2}{45} x^2 P[\{2, 1, 3\}, 1, 1, 3, 3] - \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 2, 2, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 3, 3, 3] + \frac{2}{135} x^2 P[\{2, 1, 3\}, 2, 2, 2, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 2, 2, 2, 3] + \frac{2}{45} x^2 P[\{2, 1, 3\}, 2, 2, 3, 3] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 2, 3, 3, 3] + \frac{2}{135} x^2 P[\{2, 1, 3\}, 3, 3, 3, 3]]
\end{aligned}$$

d = 5; d3[R3[Append[B[d], 0]] // Last]

0

d = 6; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned} & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], \frac{1}{2} x^2 P[\{2, 1\}] - \frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\ & \frac{1}{6} x^3 P[\{1, 2\}], \frac{1}{24} x^4 P[\{2, 1\}] - \frac{13}{90} x^3 P[\{1, 2\}, 1] + \frac{13}{90} x^3 P[\{1, 2\}, 2] - \\ & \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \\ & \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], \\ & \frac{1}{120} x^5 P[\{1, 2\}], \frac{1}{720} x^6 P[\{2, 1\}] - \frac{37 x^5 P[\{1, 2\}, 1]}{7560} + \frac{37 x^5 P[\{1, 2\}, 2]}{7560} - \\ & \frac{1}{270} x^4 P[\{2, 1\}, 1, 1] + \frac{1}{270} x^4 P[\{2, 1\}, 1, 2] + \frac{31 x^3 P[\{1, 2\}, 1, 1, 1]}{1890} - \\ & \frac{31}{630} x^3 P[\{1, 2\}, 1, 1, 2] + \frac{31}{630} x^3 P[\{1, 2\}, 1, 2, 2] - \frac{31 x^3 P[\{1, 2\}, 2, 2, 2]}{1890} + \\ & \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \\ & \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \\ & \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2]] \end{aligned}$$

d = 7; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned} & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], \frac{1}{2} x^2 P[\{2, 1\}] - \frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\ & \frac{1}{6} x^3 P[\{1, 2\}], \frac{1}{24} x^4 P[\{2, 1\}] - \frac{13}{90} x^3 P[\{1, 2\}, 1] + \frac{13}{90} x^3 P[\{1, 2\}, 2] - \\ & \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \\ & \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], \frac{1}{120} x^5 P[\{1, 2\}], \\ & \frac{1}{720} x^6 P[\{2, 1\}] - \frac{37 x^5 P[\{1, 2\}, 1]}{7560} + \frac{37 x^5 P[\{1, 2\}, 2]}{7560} - \frac{1}{270} x^4 P[\{2, 1\}, 1, 1] + \\ & \frac{1}{270} x^4 P[\{2, 1\}, 1, 2] + \frac{31 x^3 P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630} x^3 P[\{1, 2\}, 1, 1, 2] + \\ & \frac{31}{630} x^3 P[\{1, 2\}, 1, 2, 2] - \frac{31 x^3 P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \\ & \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \\ & \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\ & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7 P[\{1, 2\}]}{5040}] \end{aligned}$$

d = 8; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], \frac{1}{2} x^2 P[\{2, 1\}] - \frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\
 & \frac{1}{6} x^3 P[\{1, 2\}], \frac{1}{24} x^4 P[\{2, 1\}] - \frac{13}{90} x^3 P[\{1, 2\}, 1] + \frac{13}{90} x^3 P[\{1, 2\}, 2] - \\
 & \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \\
 & \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], \frac{1}{120} x^5 P[\{1, 2\}], \\
 & \frac{1}{720} x^6 P[\{2, 1\}] - \frac{37 x^5 P[\{1, 2\}, 1]}{7560} + \frac{37 x^5 P[\{1, 2\}, 2]}{7560} - \frac{1}{270} x^4 P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{270} x^4 P[\{2, 1\}, 1, 2] + \frac{31 x^3 P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630} x^3 P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{31}{630} x^3 P[\{1, 2\}, 1, 2, 2] - \frac{31 x^3 P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \\
 & \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7 P[\{1, 2\}]}{5040}, \\
 & \frac{x^8 P[\{2, 1\}]}{40320} - \frac{29 x^7 P[\{1, 2\}, 1]}{75600} + \frac{29 x^7 P[\{1, 2\}, 2]}{75600} - \frac{41 x^6 P[\{2, 1\}, 1, 1]}{113400} + \\
 & \frac{41 x^6 P[\{2, 1\}, 1, 2]}{113400} + \frac{293 x^5 P[\{1, 2\}, 1, 1, 1]}{113400} + \frac{521 x^5 P[\{1, 2\}, 1, 1, 2]}{113400} - \\
 & \frac{521 x^5 P[\{1, 2\}, 1, 2, 2]}{113400} - \frac{293 x^5 P[\{1, 2\}, 2, 2, 2]}{113400} + \frac{4 x^4 P[\{2, 1\}, 1, 1, 1, 1]}{1575} + \\
 & \frac{31 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} - \frac{67 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \\
 & \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \frac{58 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \\
 & \frac{58 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \frac{29 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{29 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & x P[\{1, 2\}, 1, 1, 1, 1, 1, 1] - \frac{1}{4725} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}]
 \end{aligned}$$

d = 9; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], \frac{1}{2} x^2 P[\{2, 1\}] - \frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\
 & \frac{1}{6} x^3 P[\{1, 2\}], \frac{1}{24} x^4 P[\{2, 1\}] - \frac{13}{90} x^3 P[\{1, 2\}, 1] + \frac{13}{90} x^3 P[\{1, 2\}, 2] - \\
 & \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \\
 & \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], \frac{1}{120} x^5 P[\{1, 2\}], \\
 & \frac{1}{720} x^6 P[\{2, 1\}] - \frac{37 x^5 P[\{1, 2\}, 1]}{7560} + \frac{37 x^5 P[\{1, 2\}, 2]}{7560} - \frac{1}{270} x^4 P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{270} x^4 P[\{2, 1\}, 1, 2] + \frac{31 x^3 P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630} x^3 P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{31}{630} x^3 P[\{1, 2\}, 1, 2, 2] - \frac{31 x^3 P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \\
 & \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7 P[\{1, 2\}]}{5040}, \\
 & \frac{x^8 P[\{2, 1\}]}{40320} - \frac{29 x^7 P[\{1, 2\}, 1]}{75600} + \frac{29 x^7 P[\{1, 2\}, 2]}{75600} - \frac{41 x^6 P[\{2, 1\}, 1, 1]}{113400} + \\
 & \frac{41 x^6 P[\{2, 1\}, 1, 2]}{113400} + \frac{293 x^5 P[\{1, 2\}, 1, 1, 1]}{113400} + \frac{521 x^5 P[\{1, 2\}, 1, 1, 2]}{113400} - \\
 & \frac{521 x^5 P[\{1, 2\}, 1, 2, 2]}{113400} - \frac{293 x^5 P[\{1, 2\}, 2, 2, 2]}{113400} + \frac{4 x^4 P[\{2, 1\}, 1, 1, 1, 1]}{1575} + \\
 & \frac{31 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} - \frac{67 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \\
 & \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \frac{58 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \\
 & \frac{58 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \frac{29 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{29 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & \frac{x P[\{1, 2\}, 1, 1, 1, 1, 1, 1]}{4725} - \frac{1}{675} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \frac{x^9 P[\{1, 2\}]}{362880}]
 \end{aligned}$$

d = 10; B[d] = Append[B[d - 1],

x^d P[RotateLeft[{2, 1}, d]] / d! - d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], \frac{1}{2} x^2 P[\{2, 1\}] - \frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\
 & \frac{1}{6} x^3 P[\{1, 2\}], \frac{1}{24} x^4 P[\{2, 1\}] - \frac{13}{90} x^3 P[\{1, 2\}, 1] + \frac{13}{90} x^3 P[\{1, 2\}, 2] - \\
 & \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \\
 & \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], \frac{1}{120} x^5 P[\{1, 2\}],
 \end{aligned}$$

$$\begin{aligned}
 & \frac{1}{720} x^6 P[\{2, 1\}] - \frac{37 x^5 P[\{1, 2\}, 1]}{7560} + \frac{37 x^5 P[\{1, 2\}, 2]}{7560} - \frac{1}{270} x^4 P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{270} x^4 P[\{2, 1\}, 1, 2] + \frac{31 x^3 P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630} x^3 P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{31}{630} x^3 P[\{1, 2\}, 1, 2, 2] - \frac{31 x^3 P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \\
 & \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7 P[\{1, 2\}]}{5040}, \\
 & \frac{x^8 P[\{2, 1\}]}{40320} - \frac{29 x^7 P[\{1, 2\}, 1]}{75600} + \frac{29 x^7 P[\{1, 2\}, 2]}{75600} - \frac{41 x^6 P[\{2, 1\}, 1, 1]}{113400} + \\
 & \frac{41 x^6 P[\{2, 1\}, 1, 2]}{113400} + \frac{293 x^5 P[\{1, 2\}, 1, 1, 1]}{113400} + \frac{521 x^5 P[\{1, 2\}, 1, 1, 2]}{113400} - \\
 & \frac{521 x^5 P[\{1, 2\}, 1, 2, 2]}{113400} - \frac{293 x^5 P[\{1, 2\}, 2, 2, 2]}{113400} + \frac{4 x^4 P[\{2, 1\}, 1, 1, 1, 1]}{1575} + \\
 & \frac{31 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} - \frac{67 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \\
 & \frac{29 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \frac{58 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \\
 & \frac{58 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \frac{29 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{29 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1] - \frac{1}{675} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \frac{x^9 P[\{1, 2\}]}{362880}, \\
 & \frac{x^{10} P[\{2, 1\}]}{3628800} + \frac{1129 x^9 P[\{1, 2\}, 1]}{59875200} - \frac{1129 x^9 P[\{1, 2\}, 2]}{59875200} + \frac{13 x^8 P[\{2, 1\}, 1, 1]}{680400} - \\
 & \frac{13 x^8 P[\{2, 1\}, 1, 2]}{680400} - \frac{743 x^7 P[\{1, 2\}, 1, 1, 1]}{7484400} - \frac{779 x^7 P[\{1, 2\}, 1, 1, 2]}{831600} + \\
 & \frac{779 x^7 P[\{1, 2\}, 1, 2, 2]}{831600} + \frac{743 x^7 P[\{1, 2\}, 2, 2, 2]}{7484400} - \frac{17 x^6 P[\{2, 1\}, 1, 1, 1, 1]}{170100} - \\
 & \frac{71 x^6 P[\{2, 1\}, 1, 1, 1, 2]}{85050} + \frac{53 x^6 P[\{2, 1\}, 1, 1, 2, 2]}{56700} - \frac{347 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1]}{623700} + \\
 & \frac{85 x^5 P[\{1, 2\}, 1, 1, 1, 1, 2]}{74844} + \frac{223 x^5 P[\{1, 2\}, 1, 1, 1, 2, 2]}{37422} - \\
 & \frac{223 x^5 P[\{1, 2\}, 1, 1, 2, 2, 2]}{37422} - \frac{85 x^5 P[\{1, 2\}, 1, 2, 2, 2, 2]}{74844} + \\
 & \frac{347 x^5 P[\{1, 2\}, 2, 2, 2, 2, 2]}{623700} - \frac{47 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1]}{85050} + \\
 & \frac{71 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 2]}{42525} + \frac{83 x^4 P[\{2, 1\}, 1, 1, 1, 1, 2, 2]}{17010} - \\
 & \frac{17 x^4 P[\{2, 1\}, 1, 1, 1, 2, 2, 2]}{2835} + \frac{233 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{935550} - \\
 & \frac{233 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2]}{133650} + \frac{233 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2]}{44550} - \\
 & \frac{233 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2]}{26730} + \frac{233 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2]}{26730} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{233 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2]}{44550} + \frac{233 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2]}{133650} - \\
 & \frac{233 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{935550} + \frac{2 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1]}{8505} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2]}{8505} + \frac{8 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2]}{1215} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2]}{1215} + \frac{2}{243} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2, 2, 2]} - \\
 & \frac{2 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1]}{93555} + \frac{2 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2]}{10395} - \\
 & \frac{8 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2]}{10395} + \frac{8 x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2]}{4455} - \\
 & \frac{4 x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2]}{1485} + \frac{4 x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{1485} - \\
 & \frac{8 x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2]}{4455} + \frac{8 x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{10395} - \\
 & \frac{2 x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{10395} + \frac{2 x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{93555}]
 \end{aligned}$$

f12 = GeneratingSeries[{1, 2}, B[10]] /. {t[i_] -> ht_i, x -> hx}

$$\begin{aligned}
 & \text{ASeries}[2, 0, hx, -\frac{1}{3} h^2 x t_1 + \frac{1}{3} h^2 x t_2, \frac{h^3 x^3}{6}, \\
 & -\frac{13}{90} h^4 x^3 t_1 + \frac{1}{45} h^4 x t_1^3 + \frac{13}{90} h^4 x^3 t_2 - \frac{1}{15} h^4 x t_1^2 t_2 + \frac{1}{15} h^4 x t_1 t_2^2 - \frac{1}{45} h^4 x t_2^3, \frac{h^5 x^5}{120}, \\
 & -\frac{37}{7560} h^6 x^5 t_1 + \frac{31}{1890} h^6 x^3 t_1^3 - \frac{2}{945} h^6 x t_1^5 + \frac{37}{7560} h^6 x^5 t_2 - \frac{31}{630} h^6 x^3 t_1^2 t_2 + \frac{2}{189} h^6 x t_1^4 t_2 + \\
 & \frac{31}{630} h^6 x^3 t_1 t_2^2 - \frac{4}{189} h^6 x t_1^3 t_2^2 - \frac{31}{1890} h^6 x^3 t_2^3 + \frac{4}{189} h^6 x t_1^2 t_2^3 - \frac{2}{189} h^6 x t_1 t_2^4 + \frac{2}{945} h^6 x t_2^5, \frac{h^7 x^7}{5040}, \\
 & -\frac{29}{75600} h^8 x^7 t_1 + \frac{293}{113400} h^8 x^5 t_1^3 - \frac{29}{14175} h^8 x^3 t_1^5 + \frac{h^8 x t_1^7}{4725} + \frac{29}{75600} h^8 x^7 t_2 + \frac{521}{113400} h^8 x^5 t_1^2 t_2 + \frac{29}{2835} h^8 x^3 t_1^4 t_2 - \\
 & \frac{1}{675} h^8 x t_1^6 t_2 - \frac{521}{113400} h^8 x^5 t_1 t_2^2 - \frac{58}{2835} h^8 x^3 t_1^3 t_2^2 + \frac{1}{225} h^8 x t_1^5 t_2^2 - \frac{293}{113400} h^8 x^5 t_2^3 + \frac{58}{2835} h^8 x^3 t_1^2 t_2^3 - \\
 & \frac{1}{135} h^8 x t_1^4 t_2^3 - \frac{29}{2835} h^8 x^3 t_1 t_2^4 + \frac{1}{135} h^8 x t_1^3 t_2^4 + \frac{29}{14175} h^8 x^3 t_2^5 - \frac{1}{225} h^8 x t_1^2 t_2^5 + \frac{1}{675} h^8 x t_1 t_2^6 - \frac{h^8 x t_2^7}{4725}, \\
 & \frac{h^9 x^9}{362880}, \frac{1129}{59875200} h^{10} x^9 t_1 - \frac{743}{7484400} h^{10} x^7 t_1^3 - \frac{347}{623700} h^{10} x^5 t_1^5 + \frac{233}{935550} h^{10} x^3 t_1^7 - \frac{2}{93555} h^{10} x t_1^9 - \frac{1129}{59875200} h^{10} x^9 t_2 - \\
 & \frac{779}{831600} h^{10} x^7 t_1^2 t_2 + \frac{85}{74844} h^{10} x^5 t_1^4 t_2 - \frac{233}{133650} h^{10} x^3 t_1^6 t_2 + \frac{2}{10395} h^{10} x t_1^8 t_2 + \frac{779}{831600} h^{10} x^7 t_1 t_2^2 + \frac{223}{37422} h^{10} x^5 t_1^3 t_2^2 + \\
 & \frac{233}{44550} h^{10} x^3 t_1^5 t_2^2 - \frac{8}{10395} h^{10} x t_1^7 t_2^2 + \frac{743}{7484400} h^{10} x^7 t_2^3 - \frac{223}{37422} h^{10} x^5 t_1^2 t_2^3 - \frac{233}{26730} h^{10} x^3 t_1^4 t_2^3 + \frac{8}{4455} h^{10} x t_1^6 t_2^3 - \\
 & \frac{85}{74844} h^{10} x^5 t_1 t_2^4 + \frac{233}{26730} h^{10} x^3 t_1^3 t_2^4 - \frac{4}{1485} h^{10} x t_1^5 t_2^4 + \frac{347}{623700} h^{10} x^5 t_2^5 - \frac{233}{44550} h^{10} x^3 t_1^2 t_2^5 + \frac{4}{1485} h^{10} x t_1^4 t_2^5 + \\
 & \frac{233}{133650} h^{10} x^3 t_1 t_2^6 - \frac{8}{4455} h^{10} x t_1^3 t_2^6 - \frac{233}{935550} h^{10} x^3 t_2^7 + \frac{8}{10395} h^{10} x t_1^2 t_2^7 - \frac{2}{10395} h^{10} x t_1 t_2^8 + \frac{2}{93555} h^{10} x t_2^9]
 \end{aligned}$$

f21 = GeneratingSeries[{2, 1}, **B**[10]] /. {t[i_] -> ht_i, x -> hx}

$$\begin{aligned} & \text{ASeries}\left[2, 1, 0, \frac{h^2 x^2}{2}, 0, \frac{h^4 x^4}{24} - \frac{1}{9} h^4 x^2 t_1^2 + \frac{1}{9} h^4 x^2 t_1 t_2, 0, \right. \\ & \frac{h^6 x^6}{720} - \frac{1}{270} h^6 x^4 t_1^2 + \frac{2}{135} h^6 x^2 t_1^2 + \frac{1}{270} h^6 x^4 t_1 t_2 - \frac{8}{135} h^6 x^2 t_1^3 t_2 + \frac{2}{45} h^6 x^2 t_1^2 t_2^2, \\ & 0, \frac{h^8 x^8}{40320} - \frac{41 h^8 x^6 t_1^2}{113400} + \frac{4 h^8 x^4 t_1^4}{1575} - \frac{1}{525} h^8 x^2 t_1^6 + \frac{41 h^8 x^6 t_1 t_2}{113400} + \\ & \frac{31 h^8 x^4 t_1^3 t_2}{14175} + \frac{2}{175} h^8 x^2 t_1^5 t_2 - \frac{67 h^8 x^4 t_1^2 t_2^2}{14175} - \frac{1}{35} h^8 x^2 t_1^4 t_2^2 + \frac{2}{105} h^8 x^2 t_1^3 t_2^2, \\ & 0, \frac{h^{10} x^{10}}{3628800} + \frac{13 h^{10} x^8 t_1^2}{680400} - \frac{17 h^{10} x^6 t_1^4}{170100} - \frac{47 h^{10} x^4 t_1^6}{85050} + \frac{2 h^{10} x^2 t_1^8}{8505} - \frac{13 h^{10} x^8 t_1 t_2}{680400} - \\ & \frac{71 h^{10} x^6 t_1^3 t_2}{85050} + \frac{71 h^{10} x^4 t_1^5 t_2}{42525} - \frac{16 h^{10} x^2 t_1^7 t_2}{8505} + \frac{53 h^{10} x^6 t_1^2 t_2^2}{56700} + \\ & \left. \frac{83 h^{10} x^4 t_1^4 t_2^2}{17010} + \frac{8 h^{10} x^2 t_1^6 t_2^2}{1215} - \frac{17 h^{10} x^4 t_1^3 t_2^3}{2835} - \frac{16 h^{10} x^2 t_1^5 t_2^3}{1215} + \frac{2}{243} h^{10} x^2 t_1^4 t_2^4 \right] \end{aligned}$$

f12 /. h -> 1 // TeXForm

$$\begin{aligned} & \text{\text{ASeries}\left(2, 0, x, \frac{x t_2}{3} - \frac{x t_1}{3}, \frac{x^3}{6}, -\frac{13}{90} t_2 x^4 - \frac{t_2^3 x}{45} + \frac{t_2^3 x}{45} + \frac{1}{15} t_1 t_2^2 x - \frac{1}{15} t_1^2 t_2 x, \frac{x^5}{7560} + \frac{31 t_1^3 x^3}{1890} - \frac{31 t_2^3 x^3}{1890} + \frac{31}{630} t_1 t_2^2 x^3 + \frac{2 t_2^5 x}{945} - \frac{2}{189} t_1 t_2^4 x + \frac{4}{189} t_1^2 t_2^3 x - \frac{x^7}{5040}, -\frac{29 t_1 x^7}{75600} + \frac{29 t_2 x^7}{75600} + \frac{293 t_1^3 t_2}{113400} + \frac{521 t_1^2 t_2 x^5}{113400} - \frac{29 t_1^5 x^3}{14175} + \frac{29 t_1^3 x^3}{2835} + \frac{58 t_1^2 t_2^3 x^3}{2835} - \frac{58 t_1^3 t_2^2 x^3}{2835} + \frac{29 t_1^3 t_2^2 x^3}{4725} + \frac{1}{675} t_1 t_2^6 x - \frac{1}{225} t_1^2 t_2^5 x + \frac{1}{135} t_1^3 t_2^2 t_2^2 x - \frac{1}{675} t_1^6 t_2 x, \frac{x^9}{362880}, \frac{1129 t_1 x^9}{59875200} - \frac{779 t_1^3 x^7}{7484400} + \frac{743 t_2^3 x^7}{7484400} + \frac{779 t_1 t_2^2 x^7}{831600} - \frac{779 t_1^5 x^5}{623700} + \frac{347 t_2^5 x^5}{623700} - \frac{85 t_1 t_2^4 x^5}{74844} - \frac{223 t_1^4 x^5}{37422} + \frac{85 t_1^4 t_2 x^5}{74844} + \frac{233 t_1^7 x^3}{935550} - \frac{233 t_2^7 x^3}{133650} - \frac{233 t_1^2 t_2^5 x^3}{44550} + \frac{233 t_1^3 t_2^4 x^3}{26730} - \frac{233 t_1^3 x^3}{44550} - \frac{233 t_1^6 t_2 x^3}{133650} - \frac{2 t_1^9 x}{93555} + \frac{2 t_2^9 x}{10395} - \frac{8 t_1^3 t_2^6 x}{4455} + \frac{4 t_1^4 t_2^5 x}{1485} - \frac{4 t_1^5 t_2^4 t_2^2 x}{10395} + \frac{2 t_1^8 t_2 x}{10395}\right) \end{aligned}$$

f21 /. h -> 1 // TeXForm

$$\begin{aligned} & \text{\text{ASeries}\left(2, 1, 0, \frac{x^2}{2}, 0, \frac{x^4}{24} - \frac{1}{9} t_1^2 x^2 + \frac{1}{9} t_1^2 x^2 + \frac{1}{270} t_1 t_2 x^4 + \frac{1}{270} t_1 t_2 x^4 + \frac{2}{135} t_1^4 x^2 + \frac{2}{45} t_1^2 t_2^2 x^2 - \frac{1}{113400} t_1^3 t_2 x^6 + \frac{41 t_1 t_2 x^6}{113400} + \frac{4 t_1^4 x^4}{1575} - \frac{67 t_1 t_2^2 x^4}{14175} - \frac{1}{525} t_1^6 x^2 + \frac{2}{105} t_1^3 t_2^2 x^2 - \frac{1}{3628800} t_1^3 t_2^2 x^8 + \frac{13 t_1^2 t_2^3 x^8}{680400} - \frac{17 t_1^4 t_2^4 x^8}{170100} - \frac{47 t_1^6 t_2^4 x^8}{85050} - \frac{2 t_1^8 t_2^4 x^8}{8505} - \frac{13 t_1^8 t_2^4 x^8}{680400} - \frac{71 t_1^3 t_2^3 x^6}{85050} + \frac{71 t_1^5 t_2 x^6}{42525} + \frac{2 t_1^7 x^6}{8505} + \frac{2}{243} t_1^4 t_2^4 x^2 - \frac{16 t_1^7 t_2 x^2}{8505}\right) \end{aligned}$$

The "Non-Exponential" Solution:

{R3[B[0]], R3[B[1]], R3[Append[B[1], 0]]}

{ASeries[3, 0], ASeries[3, 0, 0], ASeries[3, 0, 0, -x^2 P[{1, 3, 2}] + x^2 P[{2, 1, 3}]]}

d = 2; d2inv[d, Last[R3[Append[B[d - 1], 0]]]]

$$\frac{1}{3} x P[\{1, 2\}, 1] - \frac{1}{3} x P[\{1, 2\}, 2]$$

d = 2; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], xP[{1, 2}], $\frac{1}{2}x^2P[{2, 1}] - \frac{1}{3}xP[{1, 2}, 1] + \frac{1}{3}xP[{1, 2}, 2]$]

d = 2; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0]

d = 3; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], xP[{1, 2}],

$\frac{1}{2}x^2P[{2, 1}] - \frac{1}{3}xP[{1, 2}, 1] + \frac{1}{3}xP[{1, 2}, 2], \frac{1}{6}x^3P[{1, 2}]$]

d = 3; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0, $\frac{1}{18}x^4P[{1, 3, 2}] + \frac{1}{18}x^4P[{2, 1, 3}] -$

$\frac{1}{9}x^4P[{3, 2, 1}] - \frac{1}{3}x^3P[{1, 2, 3}, 1] + \frac{1}{3}x^3P[{1, 2, 3}, 2] + \frac{1}{9}x^3P[{2, 3, 1}, 2] -$

$\frac{1}{9}x^3P[{2, 3, 1}, 3] + \frac{2}{9}x^3P[{3, 1, 2}, 1] - \frac{2}{9}x^3P[{3, 1, 2}, 2] +$

$\frac{1}{9}x^2P[{1, 3, 2}, 1, 1] - \frac{1}{9}x^2P[{1, 3, 2}, 1, 2] - \frac{1}{9}x^2P[{1, 3, 2}, 1, 3] +$

$\frac{1}{9}x^2P[{1, 3, 2}, 2, 2] - \frac{1}{9}x^2P[{1, 3, 2}, 2, 3] + \frac{1}{9}x^2P[{1, 3, 2}, 3, 3] -$

$\frac{1}{9}x^2P[{2, 1, 3}, 1, 1] + \frac{1}{9}x^2P[{2, 1, 3}, 1, 2] + \frac{1}{9}x^2P[{2, 1, 3}, 1, 3] -$

$\frac{1}{9}x^2P[{2, 1, 3}, 2, 2] + \frac{1}{9}x^2P[{2, 1, 3}, 2, 3] - \frac{1}{9}x^2P[{2, 1, 3}, 3, 3]$]

d = 3; d3[R3[Append[B[d], 0]] // Last]

0

d = 4; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], xP[{1, 2}], $\frac{1}{2}x^2P[{2, 1}] - \frac{1}{3}xP[{1, 2}, 1] + \frac{1}{3}xP[{1, 2}, 2],$

$\frac{1}{6}x^3P[{1, 2}], \frac{1}{24}x^4P[{2, 1}] - \frac{13}{90}x^3P[{1, 2}, 1] + \frac{13}{90}x^3P[{1, 2}, 2] -$

$\frac{1}{9}x^2P[{2, 1}, 1, 1] + \frac{1}{9}x^2P[{2, 1}, 1, 2] + \frac{1}{45}xP[{1, 2}, 1, 1, 1] -$

$\frac{1}{15}xP[{1, 2}, 1, 1, 2] + \frac{1}{15}xP[{1, 2}, 1, 2, 2] - \frac{1}{45}xP[{1, 2}, 2, 2, 2]$]

d = 4; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0, 0, 0]

d = 5; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], xP[{1, 2}], $\frac{1}{2}x^2P[{2, 1}] - \frac{1}{3}xP[{1, 2}, 1] + \frac{1}{3}xP[{1, 2}, 2],$

$\frac{1}{6}x^3P[{1, 2}], \frac{1}{24}x^4P[{2, 1}] - \frac{13}{90}x^3P[{1, 2}, 1] + \frac{13}{90}x^3P[{1, 2}, 2] -$

$\frac{1}{9}x^2P[{2, 1}, 1, 1] + \frac{1}{9}x^2P[{2, 1}, 1, 2] + \frac{1}{45}xP[{1, 2}, 1, 1, 1] -$

$\frac{1}{15}xP[{1, 2}, 1, 1, 2] + \frac{1}{15}xP[{1, 2}, 1, 2, 2] - \frac{1}{45}xP[{1, 2}, 2, 2, 2], \frac{1}{120}x^5P[{1, 2}]$]

d = 5; R3[Append[B[d], 0]]

ASeries[3, 0, 0, 0, 0, 0, 0,

$$\begin{aligned}
& -\frac{11}{360} x^6 P[\{1, 3, 2\}] - \frac{1}{40} x^6 P[\{2, 1, 3\}] + \frac{1}{18} x^6 P[\{3, 2, 1\}] + \frac{1}{30} x^5 P[\{1, 2, 3\}, 1] - \\
& \frac{29}{270} x^5 P[\{1, 2, 3\}, 2] + \frac{2}{27} x^5 P[\{1, 2, 3\}, 3] - \frac{2}{45} x^5 P[\{2, 3, 1\}, 1] + \frac{29}{270} x^5 P[\{2, 3, 1\}, 2] - \\
& \frac{17}{270} x^5 P[\{2, 3, 1\}, 3] + \frac{1}{45} x^5 P[\{3, 1, 2\}, 1] - \frac{1}{45} x^5 P[\{3, 1, 2\}, 2] - \\
& \frac{1}{18} x^4 P[\{1, 3, 2\}, 1, 1] + \frac{23}{270} x^4 P[\{1, 3, 2\}, 1, 2] + \frac{7}{270} x^4 P[\{1, 3, 2\}, 1, 3] - \\
& \frac{1}{18} x^4 P[\{1, 3, 2\}, 2, 2] + \frac{7}{270} x^4 P[\{1, 3, 2\}, 2, 3] - \frac{7}{270} x^4 P[\{1, 3, 2\}, 3, 3] + \\
& \frac{1}{90} x^4 P[\{2, 1, 3\}, 1, 1] - \frac{11}{270} x^4 P[\{2, 1, 3\}, 1, 2] + \frac{1}{54} x^4 P[\{2, 1, 3\}, 1, 3] + \\
& \frac{11}{270} x^4 P[\{2, 1, 3\}, 2, 2] - \frac{11}{270} x^4 P[\{2, 1, 3\}, 2, 3] + \frac{1}{90} x^4 P[\{2, 1, 3\}, 3, 3] + \\
& \frac{2}{135} x^4 P[\{3, 2, 1\}, 1, 1] - \frac{8}{135} x^4 P[\{3, 2, 1\}, 1, 2] + \frac{4}{135} x^4 P[\{3, 2, 1\}, 1, 3] + \\
& \frac{4}{45} x^4 P[\{3, 2, 1\}, 2, 2] - \frac{16}{135} x^4 P[\{3, 2, 1\}, 2, 3] + \frac{2}{45} x^4 P[\{3, 2, 1\}, 3, 3] + \\
& \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 1, 1] - \frac{16}{135} x^3 P[\{1, 2, 3\}, 1, 1, 2] - \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 1, 3] + \\
& \frac{4}{27} x^3 P[\{1, 2, 3\}, 1, 2, 2] - \frac{8}{135} x^3 P[\{1, 2, 3\}, 1, 2, 3] + \frac{4}{45} x^3 P[\{1, 2, 3\}, 1, 3, 3] - \\
& \frac{2}{27} x^3 P[\{1, 2, 3\}, 2, 2, 2] + \frac{2}{27} x^3 P[\{1, 2, 3\}, 2, 2, 3] - \frac{2}{45} x^3 P[\{1, 2, 3\}, 2, 3, 3] - \\
& \frac{2}{135} x^3 P[\{1, 2, 3\}, 3, 3, 3] - \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 1, 2] + \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 1, 3] + \\
& \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 2, 2] - \frac{2}{135} x^3 P[\{2, 3, 1\}, 1, 3, 3] - \frac{4}{135} x^3 P[\{2, 3, 1\}, 2, 2, 2] + \\
& \frac{2}{27} x^3 P[\{2, 3, 1\}, 2, 2, 3] - \frac{2}{27} x^3 P[\{2, 3, 1\}, 2, 3, 3] + \frac{4}{135} x^3 P[\{2, 3, 1\}, 3, 3, 3] - \\
& \frac{2}{45} x^3 P[\{3, 1, 2\}, 1, 1, 1] + \frac{2}{27} x^3 P[\{3, 1, 2\}, 1, 1, 2] + \frac{8}{135} x^3 P[\{3, 1, 2\}, 1, 1, 3] - \\
& \frac{2}{27} x^3 P[\{3, 1, 2\}, 1, 2, 2] - \frac{8}{135} x^3 P[\{3, 1, 2\}, 1, 3, 3] + \frac{2}{45} x^3 P[\{3, 1, 2\}, 2, 2, 2] - \\
& \frac{8}{135} x^3 P[\{3, 1, 2\}, 2, 2, 3] + \frac{8}{135} x^3 P[\{3, 1, 2\}, 2, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 1] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 2] + \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 1, 1, 3] - \\
& \frac{2}{45} x^2 P[\{1, 3, 2\}, 1, 1, 2, 2] - \frac{2}{45} x^2 P[\{1, 3, 2\}, 1, 1, 3, 3] + \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 2, 2, 2] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 1, 3, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 2, 2, 2, 2] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 2, 2, 2, 3] - \frac{2}{45} x^2 P[\{1, 3, 2\}, 2, 2, 3, 3] + \\
& \frac{4}{135} x^2 P[\{1, 3, 2\}, 2, 3, 3, 3] - \frac{2}{135} x^2 P[\{1, 3, 2\}, 3, 3, 3, 3] + \\
& \frac{2}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 1] - \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 1, 1, 3] + \frac{2}{45} x^2 P[\{2, 1, 3\}, 1, 1, 2, 2] + \\
& \frac{2}{45} x^2 P[\{2, 1, 3\}, 1, 1, 3, 3] - \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 2, 2, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 1, 3, 3, 3] + \frac{2}{135} x^2 P[\{2, 1, 3\}, 2, 2, 2, 2] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 2, 2, 2, 3] + \frac{2}{45} x^2 P[\{2, 1, 3\}, 2, 2, 3, 3] - \\
& \frac{4}{135} x^2 P[\{2, 1, 3\}, 2, 3, 3, 3] + \frac{2}{135} x^2 P[\{2, 1, 3\}, 3, 3, 3, 3]]
\end{aligned}$$

d = 5; d3[R3[Append[B[d], 0]] // Last]

0

d = 6; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned} & \text{ASeries}\left[2, P[\{2, 1\}], xP[\{1, 2\}], \frac{1}{2}x^2P[\{2, 1\}] - \frac{1}{3}xP[\{1, 2\}, 1] + \frac{1}{3}xP[\{1, 2\}, 2], \right. \\ & \frac{1}{6}x^3P[\{1, 2\}], \frac{1}{24}x^4P[\{2, 1\}] - \frac{13}{90}x^3P[\{1, 2\}, 1] + \frac{13}{90}x^3P[\{1, 2\}, 2] - \\ & \frac{1}{9}x^2P[\{2, 1\}, 1, 1] + \frac{1}{9}x^2P[\{2, 1\}, 1, 2] + \frac{1}{45}xP[\{1, 2\}, 1, 1, 1] - \\ & \frac{1}{15}xP[\{1, 2\}, 1, 1, 2] + \frac{1}{15}xP[\{1, 2\}, 1, 2, 2] - \frac{1}{45}xP[\{1, 2\}, 2, 2, 2], \\ & \frac{1}{120}x^5P[\{1, 2\}], \frac{1}{720}x^6P[\{2, 1\}] - \frac{37x^5P[\{1, 2\}, 1]}{7560} + \frac{37x^5P[\{1, 2\}, 2]}{7560} - \\ & \frac{1}{270}x^4P[\{2, 1\}, 1, 1] + \frac{1}{270}x^4P[\{2, 1\}, 1, 2] + \frac{31x^3P[\{1, 2\}, 1, 1, 1]}{1890} - \\ & \frac{31}{630}x^3P[\{1, 2\}, 1, 1, 2] + \frac{31}{630}x^3P[\{1, 2\}, 1, 2, 2] - \frac{31x^3P[\{1, 2\}, 2, 2, 2]}{1890} + \\ & \frac{2}{135}x^2P[\{2, 1\}, 1, 1, 1, 1] - \frac{8}{135}x^2P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45}x^2P[\{2, 1\}, 1, 1, 2, 2] - \\ & \frac{2}{945}xP[\{1, 2\}, 1, 1, 1, 1, 1] + \frac{2}{189}xP[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189}xP[\{1, 2\}, 1, 1, 1, 2, 2] + \\ & \left. \frac{4}{189}xP[\{1, 2\}, 1, 1, 2, 2, 2] - \frac{2}{189}xP[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945}xP[\{1, 2\}, 2, 2, 2, 2, 2]\right] \end{aligned}$$

d = 7; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned} & \text{ASeries}\left[2, P[\{2, 1\}], xP[\{1, 2\}], \frac{1}{2}x^2P[\{2, 1\}] - \frac{1}{3}xP[\{1, 2\}, 1] + \frac{1}{3}xP[\{1, 2\}, 2], \right. \\ & \frac{1}{6}x^3P[\{1, 2\}], \frac{1}{24}x^4P[\{2, 1\}] - \frac{13}{90}x^3P[\{1, 2\}, 1] + \frac{13}{90}x^3P[\{1, 2\}, 2] - \\ & \frac{1}{9}x^2P[\{2, 1\}, 1, 1] + \frac{1}{9}x^2P[\{2, 1\}, 1, 2] + \frac{1}{45}xP[\{1, 2\}, 1, 1, 1] - \\ & \frac{1}{15}xP[\{1, 2\}, 1, 1, 2] + \frac{1}{15}xP[\{1, 2\}, 1, 2, 2] - \frac{1}{45}xP[\{1, 2\}, 2, 2, 2], \frac{1}{120}x^5P[\{1, 2\}], \\ & \frac{1}{720}x^6P[\{2, 1\}] - \frac{37x^5P[\{1, 2\}, 1]}{7560} + \frac{37x^5P[\{1, 2\}, 2]}{7560} - \frac{1}{270}x^4P[\{2, 1\}, 1, 1] + \\ & \frac{1}{270}x^4P[\{2, 1\}, 1, 2] + \frac{31x^3P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630}x^3P[\{1, 2\}, 1, 1, 2] + \\ & \frac{31}{630}x^3P[\{1, 2\}, 1, 2, 2] - \frac{31x^3P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135}x^2P[\{2, 1\}, 1, 1, 1, 1] - \\ & \frac{8}{135}x^2P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45}x^2P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945}xP[\{1, 2\}, 1, 1, 1, 1, 1] + \\ & \frac{2}{189}xP[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189}xP[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189}xP[\{1, 2\}, 1, 1, 2, 2, 2] - \\ & \left. \frac{2}{189}xP[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945}xP[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7P[\{1, 2\}]}{5040}\right] \end{aligned}$$

d = 8; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}[2, P[\{2, 1\}], xP[\{1, 2\}], \frac{1}{2}x^2P[\{2, 1\}] - \frac{1}{3}xP[\{1, 2\}, 1] + \frac{1}{3}xP[\{1, 2\}, 2], \\
 & \frac{1}{6}x^3P[\{1, 2\}], \frac{1}{24}x^4P[\{2, 1\}] - \frac{13}{90}x^3P[\{1, 2\}, 1] + \frac{13}{90}x^3P[\{1, 2\}, 2] - \\
 & \frac{1}{9}x^2P[\{2, 1\}, 1, 1] + \frac{1}{9}x^2P[\{2, 1\}, 1, 2] + \frac{1}{45}xP[\{1, 2\}, 1, 1, 1] - \\
 & \frac{1}{15}xP[\{1, 2\}, 1, 1, 2] + \frac{1}{15}xP[\{1, 2\}, 1, 2, 2] - \frac{1}{45}xP[\{1, 2\}, 2, 2, 2], \frac{1}{120}x^5P[\{1, 2\}], \\
 & \frac{1}{720}x^6P[\{2, 1\}] - \frac{37x^5P[\{1, 2\}, 1]}{7560} + \frac{37x^5P[\{1, 2\}, 2]}{7560} - \frac{1}{270}x^4P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{270}x^4P[\{2, 1\}, 1, 2] + \frac{31x^3P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630}x^3P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{31}{630}x^3P[\{1, 2\}, 1, 2, 2] - \frac{31x^3P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135}x^2P[\{2, 1\}, 1, 1, 1, 1] - \\
 & \frac{8}{135}x^2P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45}x^2P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945}xP[\{1, 2\}, 1, 1, 1, 1, 1] + \\
 & \frac{2}{189}xP[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189}xP[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189}xP[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189}xP[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945}xP[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7P[\{1, 2\}]}{5040}, \\
 & \frac{x^8P[\{2, 1\}]}{40320} - \frac{29x^7P[\{1, 2\}, 1]}{75600} + \frac{29x^7P[\{1, 2\}, 2]}{75600} - \frac{41x^6P[\{2, 1\}, 1, 1]}{113400} + \\
 & \frac{41x^6P[\{2, 1\}, 1, 2]}{113400} + \frac{293x^5P[\{1, 2\}, 1, 1, 1]}{113400} + \frac{521x^5P[\{1, 2\}, 1, 1, 2]}{113400} - \\
 & \frac{521x^5P[\{1, 2\}, 1, 2, 2]}{113400} - \frac{293x^5P[\{1, 2\}, 2, 2, 2]}{113400} + \frac{4x^4P[\{2, 1\}, 1, 1, 1, 1]}{1575} + \\
 & \frac{31x^4P[\{2, 1\}, 1, 1, 1, 2]}{14175} - \frac{67x^4P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{29x^3P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \\
 & \frac{29x^3P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \frac{58x^3P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \\
 & \frac{58x^3P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \frac{29x^3P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{29x^3P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525}x^2P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175}x^2P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35}x^2P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105}x^2P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & \frac{xP[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{4725} - \frac{1}{675}xP[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225}xP[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135}xP[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135}xP[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225}xP[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675}xP[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{xP[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}]
 \end{aligned}$$

d = 9; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}\left[2, P[\{2, 1\}], xP[\{1, 2\}], \frac{1}{2}x^2P[\{2, 1\}] - \frac{1}{3}xP[\{1, 2\}, 1] + \frac{1}{3}xP[\{1, 2\}, 2], \right. \\
 & \frac{1}{6}x^3P[\{1, 2\}], \frac{1}{24}x^4P[\{2, 1\}] - \frac{13}{90}x^3P[\{1, 2\}, 1] + \frac{13}{90}x^3P[\{1, 2\}, 2] - \\
 & \frac{1}{9}x^2P[\{2, 1\}, 1, 1] + \frac{1}{9}x^2P[\{2, 1\}, 1, 2] + \frac{1}{45}xP[\{1, 2\}, 1, 1, 1] - \\
 & \frac{1}{15}xP[\{1, 2\}, 1, 1, 2] + \frac{1}{15}xP[\{1, 2\}, 1, 2, 2] - \frac{1}{45}xP[\{1, 2\}, 2, 2, 2], \frac{1}{120}x^5P[\{1, 2\}], \\
 & \frac{1}{720}x^6P[\{2, 1\}] - \frac{37x^5P[\{1, 2\}, 1]}{7560} + \frac{37x^5P[\{1, 2\}, 2]}{7560} - \frac{1}{270}x^4P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{270}x^4P[\{2, 1\}, 1, 2] + \frac{31x^3P[\{1, 2\}, 1, 1, 1]}{1890} - \frac{31}{630}x^3P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{31}{630}x^3P[\{1, 2\}, 1, 2, 2] - \frac{31x^3P[\{1, 2\}, 2, 2, 2]}{1890} + \frac{2}{135}x^2P[\{2, 1\}, 1, 1, 1, 1] - \\
 & \frac{8}{135}x^2P[\{2, 1\}, 1, 1, 1, 2] + \frac{2}{45}x^2P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945}xP[\{1, 2\}, 1, 1, 1, 1, 1] + \\
 & \frac{2}{189}xP[\{1, 2\}, 1, 1, 1, 1, 2] - \frac{4}{189}xP[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189}xP[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189}xP[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945}xP[\{1, 2\}, 2, 2, 2, 2, 2], \frac{x^7P[\{1, 2\}]}{5040}, \\
 & \frac{x^8P[\{2, 1\}]}{40320} - \frac{29x^7P[\{1, 2\}, 1]}{75600} + \frac{29x^7P[\{1, 2\}, 2]}{75600} - \frac{41x^6P[\{2, 1\}, 1, 1]}{113400} + \\
 & \frac{41x^6P[\{2, 1\}, 1, 2]}{113400} + \frac{293x^5P[\{1, 2\}, 1, 1, 1]}{113400} + \frac{521x^5P[\{1, 2\}, 1, 1, 2]}{113400} - \\
 & \frac{521x^5P[\{1, 2\}, 1, 2, 2]}{113400} - \frac{293x^5P[\{1, 2\}, 2, 2, 2]}{113400} + \frac{4x^4P[\{2, 1\}, 1, 1, 1, 1]}{1575} + \\
 & \frac{31x^4P[\{2, 1\}, 1, 1, 1, 2]}{14175} - \frac{67x^4P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{29x^3P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \\
 & \frac{29x^3P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \frac{58x^3P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \\
 & \frac{58x^3P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \frac{29x^3P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{29x^3P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525}x^2P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175}x^2P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35}x^2P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105}x^2P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & \frac{xP[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{4725} - \frac{1}{675}xP[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225}xP[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135}xP[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135}xP[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225}xP[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \left. \frac{1}{675}xP[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{xP[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \frac{x^9P[\{1, 2\}]}{362880}\right]
 \end{aligned}$$

d = 10; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned}
 & \text{ASeries}\left[2, P[\{2, 1\}], xP[\{1, 2\}], -\frac{1}{3}xP[\{1, 2\}, 1] + \frac{1}{3}xP[\{1, 2\}, 2], \right. \\
 & 0, -\frac{1}{5}x^3P[\{1, 2\}, 1] + \frac{1}{5}x^3P[\{1, 2\}, 2] - \frac{1}{9}x^2P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{9}x^2P[\{2, 1\}, 1, 2] + \frac{1}{45}xP[\{1, 2\}, 1, 1, 1] - \frac{1}{15}xP[\{1, 2\}, 1, 1, 2] + \\
 & \frac{1}{15}xP[\{1, 2\}, 1, 2, 2] - \frac{1}{45}xP[\{1, 2\}, 2, 2, 2], 0, \\
 & -\frac{1}{7}x^5P[\{1, 2\}, 1] + \frac{1}{7}x^5P[\{1, 2\}, 2] - \frac{13}{135}x^4P[\{2, 1\}, 1, 1] + \frac{13}{135}x^4P[\{2, 1\}, 1, 2] + \\
 & \left. \frac{11}{315}x^3P[\{1, 2\}, 1, 1, 1] - \frac{11}{105}x^3P[\{1, 2\}, 1, 1, 2] + \frac{11}{105}x^3P[\{1, 2\}, 1, 2, 2] - \right.
 \end{aligned}$$

$$\begin{aligned}
 & \frac{11}{315} x^3 P[\{1, 2\}, 2, 2, 2] + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \\
 & \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1] + \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \\
 & \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], 0, \\
 & -\frac{1}{9} x^7 P[\{1, 2\}, 1] + \frac{1}{9} x^7 P[\{1, 2\}, 2] - \frac{1147 x^6 P[\{2, 1\}, 1, 1]}{14175} + \frac{1147 x^6 P[\{2, 1\}, 1, 2]}{14175} + \\
 & \frac{598 x^5 P[\{1, 2\}, 1, 1, 1]}{14175} - \frac{1619 x^5 P[\{1, 2\}, 1, 1, 2]}{14175} + \frac{1619 x^5 P[\{1, 2\}, 1, 2, 2]}{14175} - \\
 & \frac{598 x^5 P[\{1, 2\}, 2, 2, 2]}{14175} + \frac{13}{525} x^4 P[\{2, 1\}, 1, 1, 1, 1] - \frac{1229 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} + \\
 & \frac{878 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \\
 & \frac{148 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \frac{148 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \\
 & \frac{74 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{74 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1] - \frac{1}{675} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \\
 & 0, -\frac{1}{11} x^9 P[\{1, 2\}, 1] + \frac{1}{11} x^9 P[\{1, 2\}, 2] - \frac{2939 x^8 P[\{2, 1\}, 1, 1]}{42525} + \\
 & \frac{2939 x^8 P[\{2, 1\}, 1, 2]}{42525} + \frac{2414 x^7 P[\{1, 2\}, 1, 1, 1]}{51975} - \frac{53243 x^7 P[\{1, 2\}, 1, 1, 2]}{467775} + \\
 & \frac{53243 x^7 P[\{1, 2\}, 1, 2, 2]}{467775} - \frac{2414 x^7 P[\{1, 2\}, 2, 2, 2]}{51975} + \frac{1327 x^6 P[\{2, 1\}, 1, 1, 1, 1]}{42525} - \\
 & \frac{4223 x^6 P[\{2, 1\}, 1, 1, 1, 2]}{42525} + \frac{2896 x^6 P[\{2, 1\}, 1, 1, 2, 2]}{42525} - \frac{4058 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1]}{467775} + \\
 & \frac{3904 x^5 P[\{1, 2\}, 1, 1, 1, 1, 2]}{93555} - \frac{782 x^5 P[\{1, 2\}, 1, 1, 1, 2, 2]}{10395} + \\
 & \frac{782 x^5 P[\{1, 2\}, 1, 1, 2, 2, 2]}{10395} - \frac{3904 x^5 P[\{1, 2\}, 1, 2, 2, 2, 2]}{93555} + \\
 & \frac{4058 x^5 P[\{1, 2\}, 2, 2, 2, 2, 2]}{467775} - \frac{199 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1]}{42525} + \\
 & \frac{1124 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 2]}{42525} - \frac{97 x^4 P[\{2, 1\}, 1, 1, 1, 1, 2, 2]}{1701} + \\
 & \frac{20}{567} x^4 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1]}{467775} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 2]}{66825} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2]}{22275} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2]}{13365} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2]}{13365} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2]}{22275} + \frac{331 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2]}{66825} - \\
 & \frac{331 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{467775} + \frac{2 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1]}{8505} -
 \end{aligned}$$

$$\begin{aligned} & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2]}{8505} + \frac{8 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2]}{1215} - \\ & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2]}{1215} + \frac{2}{243} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2, 2, 2] - \\ & \frac{2 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 1]}{93555} + \frac{2 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{10395} - \\ & \frac{8 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2]}{10395} + \frac{8 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2, 2]}{4455} - \\ & \frac{4 \times P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2]}{1485} + \frac{4 \times P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{1485} - \\ & \frac{8 \times P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2]}{4455} + \frac{8 \times P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{10395} - \\ & \frac{2 \times P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{10395} + \frac{2 \times P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{93555} \end{aligned}$$

d = 11; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

$$\begin{aligned} & \text{ASeries}[2, P[\{2, 1\}], x P[\{1, 2\}], -\frac{1}{3} x P[\{1, 2\}, 1] + \frac{1}{3} x P[\{1, 2\}, 2], \\ & 0, -\frac{1}{5} x^3 P[\{1, 2\}, 1] + \frac{1}{5} x^3 P[\{1, 2\}, 2] - \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \\ & \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \\ & \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], 0, \\ & -\frac{1}{7} x^5 P[\{1, 2\}, 1] + \frac{1}{7} x^5 P[\{1, 2\}, 2] - \frac{13}{135} x^4 P[\{2, 1\}, 1, 1] + \frac{13}{135} x^4 P[\{2, 1\}, 1, 2] + \\ & \frac{11}{315} x^3 P[\{1, 2\}, 1, 1, 1] - \frac{11}{105} x^3 P[\{1, 2\}, 1, 1, 2] + \frac{11}{105} x^3 P[\{1, 2\}, 1, 2, 2] - \\ & \frac{11}{315} x^3 P[\{1, 2\}, 2, 2, 2] + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \\ & \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1] + \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 2] - \\ & \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\ & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], 0, \\ & -\frac{1}{9} x^7 P[\{1, 2\}, 1] + \frac{1}{9} x^7 P[\{1, 2\}, 2] - \frac{1147 x^6 P[\{2, 1\}, 1, 1]}{14175} + \frac{1147 x^6 P[\{2, 1\}, 1, 2]}{14175} + \\ & \frac{598 x^5 P[\{1, 2\}, 1, 1, 1]}{14175} - \frac{1619 x^5 P[\{1, 2\}, 1, 1, 2]}{14175} + \frac{1619 x^5 P[\{1, 2\}, 1, 2, 2]}{14175} - \\ & \frac{598 x^5 P[\{1, 2\}, 2, 2, 2]}{14175} + \frac{13}{525} x^4 P[\{2, 1\}, 1, 1, 1, 1] - \frac{1229 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} + \\ & \frac{878 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \\ & \frac{148 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \frac{148 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \\ & \frac{74 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{74 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\ & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\ & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\ & \frac{x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{4725} - \frac{1}{675} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\ & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\ & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\ & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \end{aligned}$$

$$\begin{aligned}
 & 0, -\frac{1}{11} x^9 P[\{1, 2\}, 1] + \frac{1}{11} x^9 P[\{1, 2\}, 2] - \frac{2939 x^8 P[\{2, 1\}, 1, 1]}{42525} + \\
 & \frac{2939 x^8 P[\{2, 1\}, 1, 2]}{42525} + \frac{2414 x^7 P[\{1, 2\}, 1, 1, 1]}{51975} - \frac{53243 x^7 P[\{1, 2\}, 1, 1, 2]}{467775} + \\
 & \frac{53243 x^7 P[\{1, 2\}, 1, 2, 2]}{467775} - \frac{2414 x^7 P[\{1, 2\}, 2, 2, 2]}{51975} + \frac{1327 x^6 P[\{2, 1\}, 1, 1, 1, 1]}{42525} - \\
 & \frac{4223 x^6 P[\{2, 1\}, 1, 1, 1, 2]}{42525} + \frac{2896 x^6 P[\{2, 1\}, 1, 1, 2, 2]}{42525} - \frac{4058 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1]}{467775} + \\
 & \frac{3904 x^5 P[\{1, 2\}, 1, 1, 1, 1, 2]}{93555} - \frac{782 x^5 P[\{1, 2\}, 1, 1, 1, 2, 2]}{10395} + \\
 & \frac{782 x^5 P[\{1, 2\}, 1, 1, 2, 2, 2]}{10395} - \frac{3904 x^5 P[\{1, 2\}, 1, 2, 2, 2, 2]}{93555} + \\
 & \frac{4058 x^5 P[\{1, 2\}, 2, 2, 2, 2, 2]}{467775} - \frac{199 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1]}{42525} + \\
 & \frac{1124 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 2]}{42525} - \frac{97 x^4 P[\{2, 1\}, 1, 1, 1, 1, 2, 2]}{1701} + \\
 & \frac{20}{567} x^4 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{467775} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2]}{66825} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2]}{22275} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2]}{13365} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2]}{13365} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2]}{22275} + \frac{331 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2]}{66825} - \\
 & \frac{331 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{467775} + \frac{2 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1]}{8505} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2]}{8505} + \frac{8 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2]}{1215} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2]}{1215} + \frac{2}{243} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2, 2, 2] - \\
 & \frac{2 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 1]}{93555} + \frac{2 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{10395} - \\
 & \frac{8 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2, 2]}{10395} + \frac{8 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2, 2]}{4455} - \\
 & \frac{4 x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2, 2]}{1485} + \frac{4 x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{1485} - \\
 & \frac{8 x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{4455} + \frac{8 x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{10395} - \\
 & \frac{2 x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{10395} + \frac{2 x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{93555}, 0]
 \end{aligned}$$

d = 12; B[d] = Append[B[d - 1], -d2inv[d, Last[R3[Append[B[d - 1], 0]]]]]

ASeries[2, P[{2, 1}], xP[{1, 2}], -1/3 xP[{1, 2}, 1] + 1/3 xP[{1, 2}, 2],

$$\begin{aligned}
 & 0, -\frac{1}{5} x^3 P[\{1, 2\}, 1] + \frac{1}{5} x^3 P[\{1, 2\}, 2] - \frac{1}{9} x^2 P[\{2, 1\}, 1, 1] + \\
 & \frac{1}{9} x^2 P[\{2, 1\}, 1, 2] + \frac{1}{45} x P[\{1, 2\}, 1, 1, 1] - \frac{1}{15} x P[\{1, 2\}, 1, 1, 2] + \\
 & \frac{1}{15} x P[\{1, 2\}, 1, 2, 2] - \frac{1}{45} x P[\{1, 2\}, 2, 2, 2], 0, \\
 & -\frac{1}{7} x^5 P[\{1, 2\}, 1] + \frac{1}{7} x^5 P[\{1, 2\}, 2] - \frac{13}{135} x^4 P[\{2, 1\}, 1, 1] + \frac{13}{135} x^4 P[\{2, 1\}, 1, 2] + \\
 & \frac{11}{315} x^3 P[\{1, 2\}, 1, 1, 1] - \frac{11}{105} x^3 P[\{1, 2\}, 1, 1, 2] + \frac{11}{105} x^3 P[\{1, 2\}, 1, 2, 2] - \\
 & \frac{11}{315} x^3 P[\{1, 2\}, 2, 2, 2] + \frac{2}{135} x^2 P[\{2, 1\}, 1, 1, 1, 1] - \frac{8}{135} x^2 P[\{2, 1\}, 1, 1, 1, 2] + \\
 & \frac{2}{45} x^2 P[\{2, 1\}, 1, 1, 2, 2] - \frac{2}{945} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1] + \frac{2}{189} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2] -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{4}{189} x P[\{1, 2\}, 1, 1, 1, 2, 2] + \frac{4}{189} x P[\{1, 2\}, 1, 1, 2, 2, 2] - \\
 & \frac{2}{189} x P[\{1, 2\}, 1, 2, 2, 2, 2] + \frac{2}{945} x P[\{1, 2\}, 2, 2, 2, 2, 2], 0, \\
 & -\frac{1}{9} x^7 P[\{1, 2\}, 1] + \frac{1}{9} x^7 P[\{1, 2\}, 2] - \frac{1147 x^6 P[\{2, 1\}, 1, 1]}{14175} + \frac{1147 x^6 P[\{2, 1\}, 1, 2]}{14175} + \\
 & \frac{598 x^5 P[\{1, 2\}, 1, 1, 1]}{14175} - \frac{1619 x^5 P[\{1, 2\}, 1, 1, 2]}{14175} + \frac{1619 x^5 P[\{1, 2\}, 1, 2, 2]}{14175} - \\
 & \frac{598 x^5 P[\{1, 2\}, 2, 2, 2]}{14175} + \frac{13}{525} x^4 P[\{2, 1\}, 1, 1, 1, 1] - \frac{1229 x^4 P[\{2, 1\}, 1, 1, 1, 2]}{14175} + \\
 & \frac{878 x^4 P[\{2, 1\}, 1, 1, 2, 2]}{14175} - \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1]}{14175} + \frac{74 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2]}{2835} - \\
 & \frac{148 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2]}{2835} + \frac{148 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2]}{2835} - \\
 & \frac{74 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2]}{2835} + \frac{74 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2]}{14175} - \\
 & \frac{1}{525} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1] + \frac{2}{175} x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2] - \\
 & \frac{1}{35} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2] + \frac{2}{105} x^2 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \\
 & x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1] - \frac{1}{675} x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2] + \\
 & \frac{1}{225} x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2] - \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2] + \\
 & \frac{1}{135} x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2] - \frac{1}{225} x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2] + \\
 & \frac{1}{675} x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2] - \frac{x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{4725}, \\
 0, & -\frac{1}{11} x^9 P[\{1, 2\}, 1] + \frac{1}{11} x^9 P[\{1, 2\}, 2] - \frac{2939 x^8 P[\{2, 1\}, 1, 1]}{42525} + \\
 & \frac{2939 x^8 P[\{2, 1\}, 1, 2]}{42525} + \frac{2414 x^7 P[\{1, 2\}, 1, 1, 1]}{51975} - \frac{53243 x^7 P[\{1, 2\}, 1, 1, 2]}{467775} + \\
 & \frac{53243 x^7 P[\{1, 2\}, 1, 2, 2]}{467775} - \frac{2414 x^7 P[\{1, 2\}, 2, 2, 2]}{51975} + \frac{1327 x^6 P[\{2, 1\}, 1, 1, 1, 1]}{42525} - \\
 & \frac{4223 x^6 P[\{2, 1\}, 1, 1, 1, 2]}{42525} + \frac{2896 x^6 P[\{2, 1\}, 1, 1, 2, 2]}{42525} - \frac{4058 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1]}{467775} + \\
 & \frac{3904 x^5 P[\{1, 2\}, 1, 1, 1, 1, 2]}{93555} - \frac{782 x^5 P[\{1, 2\}, 1, 1, 1, 2, 2]}{10395} + \\
 & \frac{782 x^5 P[\{1, 2\}, 1, 1, 2, 2, 2]}{10395} - \frac{3904 x^5 P[\{1, 2\}, 1, 2, 2, 2, 2]}{93555} + \\
 & \frac{4058 x^5 P[\{1, 2\}, 2, 2, 2, 2, 2]}{467775} - \frac{199 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1]}{42525} + \\
 & \frac{1124 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 2]}{42525} - \frac{97 x^4 P[\{2, 1\}, 1, 1, 1, 1, 2, 2]}{1701} + \\
 & \frac{20}{567} x^4 P[\{2, 1\}, 1, 1, 1, 2, 2, 2] + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{467775} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2]}{66825} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2]}{22275} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2]}{13365} + \frac{331 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2]}{13365} - \\
 & \frac{331 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2]}{22275} + \frac{331 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2]}{66825} - \\
 & \frac{331 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{467775} + \frac{2 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1]}{8505} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2]}{8505} + \frac{8 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2]}{1215} - \\
 & \frac{16 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2]}{1215} + \frac{2}{243} x^2 P[\{2, 1\}, 1, 1, 1, 1, 2, 2, 2, 2] -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{2 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 1]}{93555} + \frac{2 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{10395} - \\
 & \frac{8 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2, 2]}{10395} + \frac{8 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2, 2]}{4455} - \\
 & \frac{4 \times P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2, 2]}{1485} + \frac{4 \times P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{1485} - \\
 & \frac{8 \times P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2]}{4455} + \frac{8 \times P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{10395} - \\
 & \frac{2 \times P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{10395} + \frac{2 \times P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{93555}, \\
 0, & - \frac{1}{13} x^{11} P[\{1, 2\}, 1] + \frac{1}{13} x^{11} P[\{1, 2\}, 2] - \frac{2953639 x^{10} P[\{2, 1\}, 1, 1]}{49116375} + \\
 & \frac{2953639 x^{10} P[\{2, 1\}, 1, 2]}{49116375} + \frac{231523 x^9 P[\{1, 2\}, 1, 1, 1]}{4729725} - \\
 & \frac{14046661 x^9 P[\{1, 2\}, 1, 1, 2]}{127702575} + \frac{14046661 x^9 P[\{1, 2\}, 1, 2, 2]}{127702575} - \\
 & \frac{231523 x^9 P[\{1, 2\}, 2, 2, 2]}{4729725} + \frac{1740446 x^8 P[\{2, 1\}, 1, 1, 1]}{49116375} - \\
 & \frac{5151514 x^8 P[\{2, 1\}, 1, 1, 1, 2]}{49116375} + \frac{3411068 x^8 P[\{2, 1\}, 1, 1, 2, 2]}{49116375} - \\
 & \frac{2589746 x^7 P[\{1, 2\}, 1, 1, 1, 1, 1]}{212837625} + \frac{285224 x^7 P[\{1, 2\}, 1, 1, 1, 1, 2]}{5108103} - \\
 & \frac{462340 x^7 P[\{1, 2\}, 1, 1, 1, 2, 2]}{5108103} + \frac{462340 x^7 P[\{1, 2\}, 1, 1, 2, 2, 2]}{5108103} - \\
 & \frac{285224 x^7 P[\{1, 2\}, 1, 2, 2, 2, 2]}{5108103} + \frac{2589746 x^7 P[\{1, 2\}, 2, 2, 2, 2, 2]}{212837625} - \\
 & \frac{382048 x^6 P[\{2, 1\}, 1, 1, 1, 1, 1, 1]}{49116375} + \frac{2046658 x^6 P[\{2, 1\}, 1, 1, 1, 1, 1, 2]}{49116375} - \\
 & \frac{87874 x^6 P[\{2, 1\}, 1, 1, 1, 1, 2, 2]}{1091475} + \frac{152648 x^6 P[\{2, 1\}, 1, 1, 1, 2, 2, 2]}{3274425} + \\
 & \frac{1304 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1]}{875875} - \frac{34493 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2]}{3378375} + \\
 & \frac{891986 x^5 P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2]}{30405375} - \frac{114577 x^5 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2]}{2606175} + \\
 & \frac{114577 x^5 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2]}{2606175} - \frac{891986 x^5 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2]}{30405375} + \\
 & \frac{34493 x^5 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2]}{3378375} - \frac{1304 x^5 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2]}{875875} + \\
 & \frac{7472 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 1]}{9823275} - \frac{57697 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2]}{9823275} + \\
 & \frac{5377 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2]}{280665} - \frac{45641 x^4 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2]}{1403325} + \\
 & \frac{25931 x^4 P[\{2, 1\}, 1, 1, 1, 1, 2, 2, 2, 2]}{1403325} - \frac{19178 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1]}{212837625} + \\
 & \frac{19178 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2]}{23648625} - \frac{76712 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2, 2]}{23648625} + \\
 & \frac{76712 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2, 2]}{10135125} - \frac{38356 x^3 P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2, 2]}{3378375} + \\
 & \frac{38356 x^3 P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{3378375} - \frac{76712 x^3 P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2]}{10135125} + \\
 & \frac{76712 x^3 P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{23648625} - \frac{19178 x^3 P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{23648625} + \\
 & \frac{19178 x^3 P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{212837625} - \frac{1382 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 1, 1]}{49116375} + \\
 & \frac{2764 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{9823275} - \frac{1382 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{1091475} + \\
 & \frac{11056 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 1, 2, 2]}{3274425} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{2764 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2]}{467775} + \frac{2764 x^2 P[\{2, 1\}, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{779625} + \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]}{638512875} - \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2]}{58046625} + \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2]}{11609325} - \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2]}{3869775} + \\
 & \frac{2764 x P[\{1, 2\}, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2]}{3869775} - \\
 & \frac{2764 x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2]}{2764125} + \\
 & \frac{2764 x P[\{1, 2\}, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2]}{2764125} - \\
 & \frac{2764 x P[\{1, 2\}, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{3869775} + \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2]}{3869775} - \\
 & \frac{1382 x P[\{1, 2\}, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2]}{11609325} + \\
 & \frac{1382 x P[\{1, 2\}, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{58046625} - \\
 & \frac{1382 x P[\{1, 2\}, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]}{638512875}]
 \end{aligned}$$

```
f12 = GeneratingSeries[{1, 2}, B[12]] /. {t[i_] -> ht_i, x -> hx}
```

$$\begin{aligned}
 & h x - \frac{1}{3} h^2 x t_1 - \frac{1}{5} h^4 x^3 t_1 - \frac{1}{7} h^6 x^5 t_1 - \frac{1}{9} h^8 x^7 t_1 - \frac{1}{11} h^{10} x^9 t_1 - \frac{1}{13} h^{12} x^{11} t_1 + \\
 & \frac{1}{45} h^4 x t_1^3 + \frac{11}{315} h^6 x^3 t_1^3 + \frac{598 h^8 x^5 t_1^3}{14175} + \frac{2414 h^{10} x^7 t_1^3}{51975} + \frac{231523 h^{12} x^9 t_1^3}{4729725} - \frac{2}{945} h^6 x t_1^5 - \\
 & \frac{74 h^8 x^3 t_1^5}{14175} - \frac{4058 h^{10} x^5 t_1^5}{467775} - \frac{2589746 h^{12} x^7 t_1^5}{212837625} + \frac{h^8 x t_1^7}{4725} + \frac{331 h^{10} x^3 t_1^7}{467775} + \frac{1304 h^{12} x^5 t_1^7}{875875} - \\
 & \frac{2 h^{10} x t_1^9}{93555} - \frac{19178 h^{12} x^3 t_1^9}{212837625} + \frac{1382 h^{12} x t_1^{11}}{638512875} + \frac{1}{3} h^2 x t_2 + \frac{1}{5} h^4 x^3 t_2 + \frac{1}{7} h^6 x^5 t_2 + \\
 & \frac{1}{9} h^8 x^7 t_2 + \frac{1}{11} h^{10} x^9 t_2 + \frac{1}{13} h^{12} x^{11} t_2 - \frac{1}{15} h^4 x t_1^2 t_2 - \frac{11}{105} h^6 x^3 t_1^2 t_2 - \frac{1619 h^8 x^5 t_1^2 t_2}{14175} - \\
 & \frac{53243 h^{10} x^7 t_1^2 t_2}{467775} - \frac{14046661 h^{12} x^9 t_1^2 t_2}{127702575} + \frac{2}{189} h^6 x t_1^4 t_2 + \frac{74 h^8 x^3 t_1^4 t_2}{2835} + \frac{3904 h^{10} x^5 t_1^4 t_2}{93555} + \\
 & \frac{285224 h^{12} x^7 t_1^4 t_2}{5108103} - \frac{1}{675} h^8 x t_1^6 t_2 - \frac{331 h^{10} x^3 t_1^6 t_2}{66825} - \frac{34493 h^{12} x^5 t_1^6 t_2}{3378375} + \frac{2 h^{10} x t_1^8 t_2}{10395} + \\
 & \frac{19178 h^{12} x^3 t_1^8 t_2}{23648625} - \frac{1382 h^{12} x t_1^{10} t_2}{58046625} + \frac{1}{15} h^4 x t_1 t_2^2 + \frac{11}{105} h^6 x^3 t_1 t_2^2 + \frac{1619 h^8 x^5 t_1 t_2^2}{14175} + \\
 & \frac{53243 h^{10} x^7 t_1 t_2^2}{467775} + \frac{14046661 h^{12} x^9 t_1 t_2^2}{127702575} - \frac{4}{189} h^6 x t_1^3 t_2^2 - \frac{148 h^8 x^3 t_1^3 t_2^2}{2835} - \frac{782 h^{10} x^5 t_1^3 t_2^2}{10395} - \\
 & \frac{462340 h^{12} x^7 t_1^3 t_2^2}{5108103} + \frac{1}{225} h^8 x t_1^5 t_2^2 + \frac{331 h^{10} x^3 t_1^5 t_2^2}{22275} + \frac{891986 h^{12} x^5 t_1^5 t_2^2}{30405375} - \frac{8 h^{10} x t_1^7 t_2^2}{10395} - \\
 & \frac{76712 h^{12} x^3 t_1^7 t_2^2}{23648625} + \frac{1382 h^{12} x t_1^9 t_2^2}{11609325} - \frac{1}{45} h^4 x t_2^3 - \frac{11}{315} h^6 x^3 t_2^3 - \frac{598 h^8 x^5 t_2^3}{14175} - \frac{2414 h^{10} x^7 t_2^3}{51975} - \\
 & \frac{231523 h^{12} x^9 t_2^3}{4729725} + \frac{4}{189} h^6 x t_1^2 t_2^3 + \frac{148 h^8 x^3 t_1^2 t_2^3}{2835} + \frac{782 h^{10} x^5 t_1^2 t_2^3}{10395} + \frac{462340 h^{12} x^7 t_1^2 t_2^3}{5108103} - \\
 & \frac{1}{135} h^8 x t_1^4 t_2^3 - \frac{331 h^{10} x^3 t_1^4 t_2^3}{13365} - \frac{114577 h^{12} x^5 t_1^4 t_2^3}{2606175} + \frac{8 h^{10} x t_1^6 t_2^3}{4455} + \frac{76712 h^{12} x^3 t_1^6 t_2^3}{10135125} - \\
 & \frac{1382 h^{12} x t_1^8 t_2^3}{3869775} - \frac{2}{189} h^6 x t_1 t_2^4 - \frac{74 h^8 x^3 t_1 t_2^4}{2835} - \frac{3904 h^{10} x^5 t_1 t_2^4}{93555} - \frac{285224 h^{12} x^7 t_1 t_2^4}{5108103} + \\
 & \frac{1}{135} h^8 x t_1^3 t_2^4 + \frac{331 h^{10} x^3 t_1^3 t_2^4}{13365} + \frac{114577 h^{12} x^5 t_1^3 t_2^4}{2606175} - \frac{4 h^{10} x t_1^5 t_2^4}{1485} - \frac{38356 h^{12} x^3 t_1^5 t_2^4}{3378375} + \\
 & \frac{2764 h^{12} x t_1^7 t_2^4}{3869775} + \frac{2}{945} h^6 x t_2^5 + \frac{74 h^8 x^3 t_2^5}{14175} + \frac{4058 h^{10} x^5 t_2^5}{467775} + \frac{2589746 h^{12} x^7 t_2^5}{212837625} - \\
 & \frac{1}{225} h^8 x t_1^2 t_2^5 - \frac{331 h^{10} x^3 t_1^2 t_2^5}{22275} - \frac{891986 h^{12} x^5 t_1^2 t_2^5}{30405375} + \frac{4 h^{10} x t_1^4 t_2^5}{1485} + \frac{38356 h^{12} x^3 t_1^4 t_2^5}{3378375} - \\
 & \frac{2764 h^{12} x t_1^6 t_2^5}{2764125} + \frac{1}{675} h^8 x t_1 t_2^6 + \frac{331 h^{10} x^3 t_1 t_2^6}{66825} + \frac{34493 h^{12} x^5 t_1 t_2^6}{3378375} - \frac{8 h^{10} x t_1^3 t_2^6}{4455} - \\
 & \frac{76712 h^{12} x^3 t_1^3 t_2^6}{10135125} + \frac{2764 h^{12} x t_1^5 t_2^6}{2764125} - \frac{h^8 x t_2^7}{4725} - \frac{331 h^{10} x^3 t_2^7}{467775} - \frac{1304 h^{12} x^5 t_2^7}{875875} + \frac{8 h^{10} x t_1^2 t_2^7}{10395} + \\
 & \frac{76712 h^{12} x^3 t_1^2 t_2^7}{23648625} - \frac{2764 h^{12} x t_1^4 t_2^7}{3869775} - \frac{2 h^{10} x t_1 t_2^8}{10395} - \frac{19178 h^{12} x^3 t_1 t_2^8}{23648625} + \frac{1382 h^{12} x t_1^3 t_2^8}{3869775} + \\
 & \frac{2 h^{10} x t_2^9}{93555} + \frac{19178 h^{12} x^3 t_2^9}{212837625} - \frac{1382 h^{12} x t_1^2 t_2^9}{11609325} + \frac{1382 h^{12} x t_1 t_2^{10}}{58046625} - \frac{1382 h^{12} x t_2^{11}}{638512875}
 \end{aligned}$$

f21 = GeneratingSeries[{2, 1}, B[12]] /. {t[i_] -> ht_i, x -> hx}

$$\begin{aligned}
 & 1 - \frac{1}{9} h^4 x^2 t_1^2 - \frac{13}{135} h^6 x^4 t_1^2 - \frac{1147 h^8 x^6 t_1^2}{14175} - \frac{2939 h^{10} x^8 t_1^2}{42525} - \frac{2953639 h^{12} x^{10} t_1^2}{49116375} + \\
 & \frac{2}{135} h^6 x^2 t_1^4 + \frac{13}{525} h^8 x^4 t_1^4 + \frac{1327 h^{10} x^6 t_1^4}{42525} + \frac{1740446 h^{12} x^8 t_1^4}{49116375} - \frac{1}{525} h^8 x^2 t_1^6 - \\
 & \frac{199 h^{10} x^4 t_1^6}{42525} - \frac{382048 h^{12} x^6 t_1^6}{49116375} + \frac{2 h^{10} x^2 t_1^8}{8505} + \frac{7472 h^{12} x^4 t_1^8}{9823275} - \frac{1382 h^{12} x^2 t_1^{10}}{49116375} + \\
 & \frac{1}{9} h^4 x^2 t_1 t_2 + \frac{13}{135} h^6 x^4 t_1 t_2 + \frac{1147 h^8 x^6 t_1 t_2}{14175} + \frac{2939 h^{10} x^8 t_1 t_2}{42525} + \frac{2953639 h^{12} x^{10} t_1 t_2}{49116375} - \\
 & \frac{8}{135} h^6 x^2 t_1^3 t_2 - \frac{1229 h^8 x^4 t_1^3 t_2}{14175} - \frac{4223 h^{10} x^6 t_1^3 t_2}{42525} - \frac{5151514 h^{12} x^8 t_1^3 t_2}{49116375} + \frac{2}{175} h^8 x^2 t_1^5 t_2 + \\
 & \frac{1124 h^{10} x^4 t_1^5 t_2}{42525} + \frac{2046658 h^{12} x^6 t_1^5 t_2}{49116375} - \frac{16 h^{10} x^2 t_1^7 t_2}{8505} - \frac{57697 h^{12} x^4 t_1^7 t_2}{9823275} + \frac{2764 h^{12} x^2 t_1^9 t_2}{9823275} + \\
 & \frac{2}{45} h^6 x^2 t_1^2 t_2^2 + \frac{878 h^8 x^4 t_1^2 t_2^2}{14175} + \frac{2896 h^{10} x^6 t_1^2 t_2^2}{42525} + \frac{3411068 h^{12} x^8 t_1^2 t_2^2}{49116375} - \frac{1}{35} h^8 x^2 t_1^4 t_2^2 - \\
 & \frac{97 h^{10} x^4 t_1^4 t_2^2}{1701} - \frac{87874 h^{12} x^6 t_1^4 t_2^2}{1091475} + \frac{8 h^{10} x^2 t_1^6 t_2^2}{1215} + \frac{5377 h^{12} x^4 t_1^6 t_2^2}{280665} - \frac{1382 h^{12} x^2 t_1^8 t_2^2}{1091475} + \\
 & \frac{2}{105} h^8 x^2 t_1^3 t_2^3 + \frac{20}{567} h^{10} x^4 t_1^3 t_2^3 + \frac{152648 h^{12} x^6 t_1^3 t_2^3}{3274425} - \frac{16 h^{10} x^2 t_1^5 t_2^3}{1215} - \frac{45641 h^{12} x^4 t_1^5 t_2^3}{1403325} + \\
 & \frac{11056 h^{12} x^2 t_1^7 t_2^3}{3274425} + \frac{2}{243} h^{10} x^2 t_1^4 t_2^4 + \frac{25931 h^{12} x^4 t_1^4 t_2^4}{1403325} - \frac{2764 h^{12} x^2 t_1^6 t_2^4}{467775} + \frac{2764 h^{12} x^2 t_1^5 t_2^5}{779625}
 \end{aligned}$$

CoefficientList[f12, h] // TeXForm

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\left\{0,x,\frac{x t_2}{3}-\frac{x t_1}{3},0,-\frac{1}{5} t_1 x^3+\frac{t_2 x^3}{5}+\frac{t_2^2 x}{15}-\frac{1}{15} t_1^2 t_2 x,0,-\frac{1}{7} t_1 x^5+\frac{t_2 x^5}{7}+\frac{11}{31} x^3+\frac{11}{105} t_1 t_2^2 x^3-\frac{11}{105} t_1^2 t_2 x^3-\frac{2 t_1^5 x}{945}+\frac{4}{189} t_1^2 t_2^3 x-\frac{4}{189} t_1^3 t_2^2 x+\frac{2}{189} t_1^4 t_2 x,0,t_1^3 x^5\{14175\}-\frac{598 t_2^3 x^5}{14175}\{14175\}+\frac{1619 t_1 t_2^2 x^5}{14175}\{14175\}-\frac{14175}{14175}+\frac{74 t_2^2 x^3}{14175}\{14175\}-\frac{14175}{14175}+\frac{74 t_1 t_2^4 x^3}{2835}\{2835\}+\frac{2835}{2835}+\frac{148 t_1^2 t_2 x^3}{2835}\{2835\}+\frac{74 t_1^4 t_2 x^3}{2835}\{2835\}-\frac{t_1^7 x}{4725}\{4725\}-\frac{t_2^7 x}{4725}\{4725\}+\frac{x}{135} t_1^3 t_2^4 x-\frac{1}{135} t_1^4 t_2^3 x+\frac{1}{225} t_1^5 t_2^2 x-x^9+\frac{t_2 x^9}{11}+\frac{2414 t_1^3 x^7}{51975}-\frac{2414 t_2^3 x^7}{51975}+\frac{t_2 x^7}{467775}-\frac{4058 t_1^5 x^5}{467775}+\frac{4058 t_2^5 x^5}{467775}-\frac{3904 x^5}{10395}-\frac{782 t_1^3 t_2^2 x^5}{10395}+\frac{3904 t_1^4 t_2 x^5}{93555}+\frac{3 t_2 x^3}{467775}+\frac{331 t_1 t_2^6 x^3}{66825}-\frac{331 t_1^2 t_2^5 x^3}{22275}+\frac{3 t_2 x^3}{13365}+\frac{331 t_1^5 t_2^2 x^3}{22275}-\frac{331 t_1^6 t_2 x^3}{66825}-\frac{2 t_1 t_2^8 x}{10395}+\frac{8 t_1^2 t_2^7 x}{10395}-\frac{8 t_1^3 t_2^6 x}{4455}+\frac{4 x}{1485}+\frac{8 t_1^6 t_2^3 x}{4455}-\frac{8 t_1^7 t_2^2 x}{10395}+\frac{2 t_1^8 t_2 x}{13}+\frac{231523 t_1^3 x^9}{4729725}-\frac{231523 t_2^3 x^9}{4729725}+\frac{14 t_1^2 t_2 x^9}{2589746}-\frac{2589746 t_1^5 x^7}{212837625}+\frac{2589746 t_2^5 x^7}{5108103}+\frac{462340 t_1^2 t_2^3 x^7}{5108103}-\frac{462340 t_1^3 t_2^2 x^7}{5108103}+\frac{1304 t_1^7 x^5}{875875}-\frac{1304 t_2^7 x^5}{875875}+\frac{34493 t_2 x^5}{30405375}+\frac{114577 t_1^3 t_2^4 x^5}{2606175}-\frac{114577 t_1^4 t_2^3 x^5}{2606175}+\frac{30405375}{30405375}-\frac{34493 t_1^6 t_2 x^5}{3378375}-\frac{19178 t_1^9 x^3}{212837625}+\frac{1 t_2^8 x^3}{23648625}+\frac{76712 t_1^2 t_2^7 x^3}{23648625}-\frac{76712 t_1^3 t_2^6 x^3}{3378375}-\frac{38356 t_1^5 t_2^4 x^3}{3378375}+\frac{76712 t_1^6 t_2^3 x^3}{101351 x^3}\{23648625\}+\frac{19178 t_1^8 t_2 x^3}{23648625}+\frac{1382 t_1^{11} x}{638512875}-\frac{t_2^{10} x}{58046625}-\frac{1382 t_1^2 t_2^9 x}{11609325}+\frac{1382 t_1^3 t_2^8 x}{3869775}+\frac{2764 t_1^5 t_2^6 x}{2764125}-\frac{2764 t_1^6 t_2^5 x}{2764125}+\frac{t_2^3 x}{3869775}+\frac{1382 t_1^9 t_2^2 x}{11609325}-\frac{1382 t_1^{10} t_2 x}{58046625}

```

CoefficientList[f21, h] // TeXForm

```
\left\{1,0,0,0,\frac{1}{9} x^2 t_1 t_2-\frac{1}{9} x^2 t_1^2,0,-\frac{13}{135} t_1^2 x^4+
x^2+\frac{2}{45} t_1^2 t_2^2 x^2-\frac{8}{135} t_1^3 t_2 x^2,0,-\frac{1147 t_1^2 x^6}{:
x^6}\{14175\}+\frac{13}{525} t_1^4 x^4+\frac{878 t_1^2 t_2^2 x^4}{\{14175\}}-\frac{1229 t_1^:
x^2+\frac{2}{105} t_1^3 t_2^3 x^2-\frac{1}{35} t_1^4 t_2^2 x^2+\frac{2}{175} t_1^5 t_2
t_1 t_2 x^8}\{42525\}+\frac{1327 t_1^4 x^6}{\{42525\}}+\frac{2896 t_1^2 t_2^2 x^6}{\{42525\}}-\frac{fi
x^4}{\{42525\}}+\frac{20}{567} t_1^3 t_2^3 x^4-\frac{97 t_1^4 t_2^2 x^4}{\{1701\}}+\frac{1124 t_1
x^2}{\{8505\}}+\frac{2}{243} t_1^4 t_2^4 x^2-\frac{16 t_1^5 t_2^3 x^2}{\{1215\}}+\frac{8 t_1^6
x^2}{\{8505\}},0,-\frac{2953639 t_1^2 x^{10}}{\{49116375\}}+\frac{2953639 t_1 t_2 x^{10}}{\{49116
x^8}{49116375}+\frac{3411068 t_1^2 t_2^2 x^8}{\{49116375\}}-\frac{5151514 t_1^3 t_2 x^8}{\{49
x^6}{49116375}+\frac{152648 t_1^3 t_2^3 x^6}{\{3274425\}}-\frac{87874 t_1^4 t_2^2 x^6}{\{1091
x^6}{49116375}+\frac{7472 t_1^8 x^4}{\{9823275\}}+\frac{25931 t_1^4 t_2^4 x^4}{\{1403325\}}-\frac{fr
t_1^6 t_2^2 x^4}{\{280665\}}-\frac{57697 t_1^7 t_2 x^4}{\{9823275\}}-\frac{1382 t_1^{10} x^2}{\{4
x^2}{779625}-\frac{2764 t_1^6 t_2^4 x^2}{\{467775\}}+\frac{11056 t_1^7 t_2^3 x^2}{\{3274425\}}-
t_1^9 t_2 x^2}{\{9823275\}}\right\}
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