

FindSequenceFunction[{1, 2, 3, 4}]

#1 &

FindSequenceFunction[{22 t⁵ b_i b_j³, -52 t⁶ b_i b_j⁴, 114 t⁷ b_i b_j⁵, -240 t⁸ b_i b_j⁶, 494 t⁹ b_i b_j⁷,
-1004 t¹⁰ b_i b_j⁸, 2026 t¹¹ b_i b_j⁹, -4072 t¹² b_i b_j¹⁰, 8166 t¹³ b_i b_j¹¹, -16356 t¹⁴ b_i b_j¹²,
32738 t¹⁵ b_i b_j¹³, -65504 t¹⁶ b_i b_j¹⁴, 131038 t¹⁷ b_i b_j¹⁵, -262108 t¹⁸ b_i b_j¹⁶, 524250 t¹⁹ b_i b_j¹⁷,
-1048536 t²⁰ b_i b_j¹⁸, 2097110 t²¹ b_i b_j¹⁹, -4194260 t²² b_i b_j²⁰, 8388562 t²³ b_i b_j²¹,
-16777168 t²⁴ b_i b_j²², 33554382 t²⁵ b_i b_j²³}, **FunctionSpace** → "ConstantRecursive"]

-2 t⁴ (-4 + 2^{3+#1} - #1) b_i b_j² (-t b_j)^{#1} &

FindSequenceFunction[{22 t⁵ b_i b_j³, -52 t⁶ b_i b_j⁴, 114 t⁷ b_i b_j⁵,
-240 t⁸ b_i b_j⁶, 494 t⁹ b_i b_j⁷, -1004 t¹⁰ b_i b_j⁸, 2026 t¹¹ b_i b_j⁹, -4072 t¹² b_i b_j¹⁰,
8166 t¹³ b_i b_j¹¹, -16356 t¹⁴ b_i b_j¹², 32738 t¹⁵ b_i b_j¹³, -65504 t¹⁶ b_i b_j¹⁴}]

-2 t⁴ (-4 + 2^{3+#1} - #1) b_i b_j² (-t b_j)^{#1} &

FindSequenceFunction[{t³ b_i b_j², -t⁴ b_i b_j³, t⁵ b_i b_j⁴, -t⁶ b_i b_j⁵, t⁷ b_i b_j⁶, -t⁸ b_i b_j⁷,
t⁹ b_i b_j⁸, -t¹⁰ b_i b_j⁹, t¹¹ b_i b_j¹⁰, -t¹² b_i b_j¹¹, t¹³ b_i b_j¹², -t¹⁴ b_i b_j¹³, t¹⁵ b_i b_j¹⁴}]

-t² b_i b_j (-t b_j)^{#1} &

FindSequenceFunction[{t³ b_i b_j², -t⁴ b_i b_j³, t⁵ b_i b_j⁴, -t⁶ b_i b_j⁵, t⁷ b_i b_j⁶, -t⁸ b_i b_j⁷,
t⁹ b_i b_j⁸, -t¹⁰ b_i b_j⁹, t¹¹ b_i b_j¹⁰, -t¹² b_i b_j¹¹, t¹³ b_i b_j¹², -t¹⁴ b_i b_j¹³, t¹⁵ b_i b_j¹⁴},
FunctionSpace → {"Polynomial", "ConstantRecursive", "HolonomicSequence"}]

-t² b_i b_j (-t b_j)^{#1} &

FindSequenceFunction[
{11 t⁵ b_j³, -5 t⁶ b_j⁴, 57 t⁷ b_j⁵, -7 t⁸ b_j⁶, 247 t⁹ b_j⁷, -9 t¹⁰ b_j⁸, 1013 t¹¹ b_j⁹, -11 t¹² b_j¹⁰,
4083 t¹³ b_j¹¹, -13 t¹⁴ b_j¹², 16369 t¹⁵ b_j¹³}, **FunctionSpace** → "HypergeometricTerm"]

FindSequenceFunction[
{11 t⁵ b_j³, -5 t⁶ b_j⁴, 57 t⁷ b_j⁵, -7 t⁸ b_j⁶, 247 t⁹ b_j⁷, -9 t¹⁰ b_j⁸, 1013 t¹¹ b_j⁹, -11 t¹² b_j¹⁰,
4083 t¹³ b_j¹¹, -13 t¹⁴ b_j¹², 16369 t¹⁵ b_j¹³}, **FunctionSpace** → HypergeometricTerm]

FindSequenceFunction[{11 t⁵ b_j³, -5 t⁶ b_j⁴, 57 t⁷ b_j⁵, -7 t⁸ b_j⁶, 247 t⁹ b_j⁷, -9 t¹⁰ b_j⁸, 1013 t¹¹ b_j⁹,
-11 t¹² b_j¹⁰, 4083 t¹³ b_j¹¹, -13 t¹⁴ b_j¹², 16369 t¹⁵ b_j¹³}, **TimeConstraint** → Infinity]

FindSequenceFunction[{11 t⁵ b_j³, -5 t⁶ b_j⁴, 57 t⁷ b_j⁵, -7 t⁸ b_j⁶, 247 t⁹ b_j⁷, -9 t¹⁰ b_j⁸,
1013 t¹¹ b_j⁹, -11 t¹² b_j¹⁰, 4083 t¹³ b_j¹¹, -13 t¹⁴ b_j¹², 16369 t¹⁵ b_j¹³}, **TimeConstraint** → ∞]

FindSequenceFunction[-26 t⁵ b_j⁴, 57 t⁶ b_j⁵, -120 t⁷ b_j⁶, 247 t⁸ b_j⁷, -502 t⁹ b_j⁸,
1013 t¹⁰ b_j⁹, -2036 t¹¹ b_j¹⁰, 4083 t¹² b_j¹¹, -8178 t¹³ b_j¹², 16369 t¹⁴ b_j¹³, -32752 t¹⁵ b_j¹⁴,
65519 t¹⁶ b_j¹⁵, -131054 t¹⁷ b_j¹⁶, 262125 t¹⁸ b_j¹⁷, -524268 t¹⁹ b_j¹⁸, 1048555 t²⁰ b_j¹⁹},
FunctionSpace → "HolonomicSequence", **TimeConstraint** → ∞]

t⁴ (-5 + 2^{4+#1} - #1) b_j³ (-t b_j)^{#1} &

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FindSequenceFunction[
  {-26 t^5 b_j^4, 57 t^6 b_j^5, -120 t^7 b_j^6, 247 t^8 b_j^7, -502 t^9 b_j^8, 1013 t^10 b_j^9, -2036 t^11 b_j^10,
   4083 t^12 b_j^11, -8178 t^13 b_j^12, 16369 t^14 b_j^13, -32752 t^15 b_j^14, 65519 t^16 b_j^15, -131054 t^17 b_j^16,
   262125 t^18 b_j^17, -524268 t^19 b_j^18, 1048555 t^20 b_j^19} /. {t -> 1, b_j -> 1}] // Timing
{0.312002, (-1)^(#1) (-5 + 2^(4+#1) - #1) &}
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FindSequenceFunction[{-26 t^5 b_j^4, 57 t^6 b_j^5, -120 t^7 b_j^6, 247 t^8 b_j^7, -502 t^9 b_j^8, 1013 t^10 b_j^9,
  -2036 t^11 b_j^10, 4083 t^12 b_j^11, -8178 t^13 b_j^12, 16369 t^14 b_j^13, -32752 t^15 b_j^14, 65519 t^16 b_j^15,
  -131054 t^17 b_j^16, 262125 t^18 b_j^17, -524268 t^19 b_j^18, 1048555 t^20 b_j^19}] // Timing
{83.4293,
  FindSequenceFunction[{-26 t^5 b_j^4, 57 t^6 b_j^5, -120 t^7 b_j^6, 247 t^8 b_j^7, -502 t^9 b_j^8, 1013 t^10 b_j^9,
    -2036 t^11 b_j^10, 4083 t^12 b_j^11, -8178 t^13 b_j^12, 16369 t^14 b_j^13, -32752 t^15 b_j^14, 65519 t^16 b_j^15,
    -131054 t^17 b_j^16, 262125 t^18 b_j^17, -524268 t^19 b_j^18, 1048555 t^20 b_j^19}]]}
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FactorTermsList[x^2 y, {x, y}]
{1, 1, y, x^2}
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FactorTermsList[x^2 y]
{1, x^2 y}
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FindSequenceFunction[
  {t^5 b_j^3 (b_j + 4 b_k), -t^6 b_j^4 (b_j - 5 b_k), t^7 b_j^5 (b_j + 6 b_k), -t^8 b_j^6 (b_j - 7 b_k), t^9 b_j^7 (b_j + 8 b_k),
   -t^10 b_j^8 (b_j - 9 b_k), t^11 b_j^9 (b_j + 10 b_k), -t^12 b_j^10 (b_j - 11 b_k), t^13 b_j^11 (b_j + 12 b_k),
   -t^14 b_j^12 (b_j - 13 b_k), t^15 b_j^13 (b_j + 14 b_k), -t^16 b_j^14 (b_j - 15 b_k), t^17 b_j^15 (b_j + 16 b_k),
   -t^18 b_j^16 (b_j - 17 b_k), t^19 b_j^17 (b_j + 18 b_k), -t^20 b_j^18 (b_j - 19 b_k)}] // Timing
{150.65, FindSequenceFunction[
  {t^5 b_j^3 (b_j + 4 b_k), -t^6 b_j^4 (b_j - 5 b_k), t^7 b_j^5 (b_j + 6 b_k), -t^8 b_j^6 (b_j - 7 b_k),
   t^9 b_j^7 (b_j + 8 b_k), -t^10 b_j^8 (b_j - 9 b_k), t^11 b_j^9 (b_j + 10 b_k), -t^12 b_j^10 (b_j - 11 b_k),
   t^13 b_j^11 (b_j + 12 b_k), -t^14 b_j^12 (b_j - 13 b_k), t^15 b_j^13 (b_j + 14 b_k), -t^16 b_j^14 (b_j - 15 b_k),
   t^17 b_j^15 (b_j + 16 b_k), -t^18 b_j^16 (b_j - 17 b_k), t^19 b_j^17 (b_j + 18 b_k), -t^20 b_j^18 (b_j - 19 b_k)}]]}
```

```
FindSequenceFunction[
  {t^5 b_j^3 (b_j + 4 b_k), -t^6 b_j^4 (b_j - 5 b_k), t^7 b_j^5 (b_j + 6 b_k), -t^8 b_j^6 (b_j - 7 b_k),
   t^9 b_j^7 (b_j + 8 b_k), -t^10 b_j^8 (b_j - 9 b_k), t^11 b_j^9 (b_j + 10 b_k), -t^12 b_j^10 (b_j - 11 b_k),
   t^13 b_j^11 (b_j + 12 b_k), -t^14 b_j^12 (b_j - 13 b_k), t^15 b_j^13 (b_j + 14 b_k)}] // Timing
{20.0617, -t^4 b_j^2 (b_j (-t b_j)^(#1) - 3 (t b_j)^(#1) b_k - #1 (t b_j)^(#1) b_k) &}
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```
FindSequenceFunction[{t^5 b_j^3 (b_j + 4 b_k), -t^6 b_j^4 (b_j - 5 b_k), t^7 b_j^5 (b_j + 6 b_k),
  -t^8 b_j^6 (b_j - 7 b_k), t^9 b_j^7 (b_j + 8 b_k), -t^10 b_j^8 (b_j - 9 b_k), t^11 b_j^9 (b_j + 10 b_k),
  -t^12 b_j^10 (b_j - 11 b_k), t^13 b_j^11 (b_j + 12 b_k), -t^14 b_j^12 (b_j - 13 b_k), t^15 b_j^13 (b_j + 14 b_k)},
  FunctionSpace -> {"ConstantRecursive", "HolonomicSequence",
    "Polynomial", "RationalFunction", "HypergeometricTerm"}] // Timing
{0.0468003, -t^4 b_j^2 (b_j (-t b_j)^(#1) - 3 (t b_j)^(#1) b_k - #1 (t b_j)^(#1) b_k) &}
```