

$$\mathbf{z} = R_{12,1}^- R_{2,7}^- R_{8,3}^- R_{4,11}^- R_{16,5}^+ R_{6,13}^+ R_{14,9}^+ R_{10,15}^+;$$

Do [z = z // m_{1,n→1}, {n, 2, 16}];

CF@z /. ω₋. E[Q₋] ⇒ ω⁻¹ /. b → Log[t]

$$\frac{1 - 4t + 8t^2 - 11t^3 + 8t^4 - 4t^5 + t^6}{t^3}$$