

$$-\theta + \theta^2 - \theta + \theta^2 - \theta + \theta^2 - \theta$$

$$= -\theta - \theta - \theta - \theta + \theta^2 + \theta^2 + \theta^2$$

$$= (-1-1-1-1)\theta + (1+1+1)\theta^2$$

$$= -4\theta + 3\theta^2$$

$$\begin{aligned}
& \left((-1\beta^2)^3 \right)^5 + \left((2\beta^3)^1 \right)^{10} + (\beta^{12} \cdot \beta^{18}) \\
&= \left((-1)^3 \beta^{2 \cdot 3} \right)^5 + \left(2^1 \beta^{3 \cdot 1} \right)^{10} + (\beta^{12} \cdot \beta^{18}) \\
&= (-1\beta^6)^5 + (2\beta^3)^{10} + (\beta^{12} \cdot \beta^{18}) \\
&= (-1)^5 \beta^{6 \cdot 5} + 2^{10} \beta^{3 \cdot 10} + 1 \cdot 1 \beta^{12+18} \\
&= -1\beta^{30} + 1024\beta^{30} + 1\beta^{30} \\
&= (-1 + 1024 + 1) \beta^{30} \\
&= 1024 \beta^{30}
\end{aligned}$$

$$\underline{8} + \underline{2}j - \underline{3}j - \underline{8}j^2 + \underline{9}j^3 + 10j^4 - \underline{3}j^3 + \underline{6}j^2 - \underline{20}j + \underline{5}j^2 - \underline{12}j^3$$

$$= 8 + 2j - 3j - 20j - 8j^2 + 6j^2 + 5j^2 + 9j^3 - 3j^3 - 12j^3 + 10j^4$$

$$= (1+2-3-20)j + (-8+6+5)j^2 + (9-3-12)j^3 + 10j^4$$

$$= -20j + 3j^2 + (-6)j^3 + 10j^4$$

$$= -20j + 3j^2 - 6j^3 + 10j^4$$

$$\begin{aligned}
& (-2)^4 x^3 - (-3)^2 x^3 + (-2)^3 x^3 - 3^2 x^3 - (-2) x^3 \\
&= 16x^3 - 9x^3 + (-8)x^3 - 9x^3 - (-2)x^3 \\
&= 16x^3 - 9x^3 - 8x^3 - 9x^3 + 2x^3 \\
&= (16 - 9 - 8 - 9 + 2) x^3 \\
&= -8x^3
\end{aligned}$$