



Binomial Theorem Ex 18.1 Q2(iii)

$$\begin{aligned}
 & (1+2\sqrt{x})^5 + (1-2\sqrt{x})^5 \\
 &= 2 \left[{}^5C_0 + {}^5C_2 (2\sqrt{x})^2 + {}^5C_4 (2\sqrt{x})^4 \right] \\
 &= 2 \left[1 + 10 \times 4 \times x + 16 \times x^2 \times 5 \right] \\
 &= 2 + 80x + 160x^2
 \end{aligned}$$

Binomial Theorem Ex 18.1 Q2(iv)

$$\begin{aligned}
 & (\sqrt{2}+1)^6 + (\sqrt{2}-1)^6 \\
 &= {}^6C_0 (\sqrt{2})^6 + {}^6C_1 (\sqrt{2})^5 + {}^6C_2 (\sqrt{2})^4 + {}^6C_3 (\sqrt{2})^3 + {}^6C_4 (\sqrt{2})^2 + {}^6C_5 (\sqrt{2}) + {}^6C_6 + {}^6C_0 (\sqrt{2})^6 - \\
 & \quad {}^6C_1 (\sqrt{2})^5 + {}^6C_2 (\sqrt{2})^4 - {}^6C_3 (\sqrt{2})^3 + {}^6C_4 (\sqrt{2})^2 - {}^6C_5 (\sqrt{2}) + {}^6C_6 (\sqrt{2})^0 \\
 &= 2 \left[2^3 + 15 \times 2^2 + 15 \times 2 + 1 \right] \\
 &= 2 \left[8 + 60 + 30 + 1 \right] = 2(99) = 198
 \end{aligned}$$

Binomial Theorem Ex 18.1 Q2(v)

$$\begin{aligned}
 & (3+\sqrt{2})^5 - (3-\sqrt{2})^5 \\
 &= 2 \left[{}^5C_1 (3)^4 (\sqrt{2})^1 + {}^5C_3 (3)^2 (\sqrt{2})^3 + {}^5C_5 (\sqrt{2})^5 \right] \\
 &= 2 \left[5 \times 81 \times \sqrt{2} + 10 \times 9 \times 2\sqrt{2} + 4\sqrt{2} \right] \\
 &= 2 \left[405\sqrt{2} + 180\sqrt{2} + 4\sqrt{2} \right] \\
 &= 2 \left[589\sqrt{2} \right] \\
 &= 1178\sqrt{2}
 \end{aligned}$$

Binomial Theorem Ex 18.1 Q2(vi)

$$\begin{aligned}
& (2 + \sqrt{3})^7 + (2 - \sqrt{3})^7 \\
&= 2 \left[{}^7C_0 2^7 + {}^7C_2 2^5 (\sqrt{3})^2 + {}^7C_4 (2)^4 (\sqrt{3})^4 + {}^7C_6 2 (\sqrt{3})^6 \right] \\
&= 2 [128 + 21 \times 32 \times 3 + 35 \times 8 \times 9 + 7 \times 2 \times 27] \\
&= 2 [128 + 2016 + 2520 + 378] \\
&= 2 [5042] \\
&= 10084
\end{aligned}$$

***** END *****