

tip:  $(ax + b)^3$

$$= a^3x^3 + 3a^2bx^2 + 3ab^2x + b^3$$

$$\begin{aligned}(1) \quad 3(4x + 9)^3 &= 3(64x^3 + 432x^2 + 972x + 729) \\ &= 192x^3 + 1296x^2 + 2916x + 2187\end{aligned}$$

$$\begin{aligned}(2) \quad -2(4x - 1)^3 &= -2(64x^3 - 48x^2 + 12x - 1) \\ &= -128x^3 + 96x^2 - 24x + 2\end{aligned}$$

$$\begin{aligned}(3) \quad -4(x - 3)^3 &= -4(x^3 - 9x^2 + 27x - 27) \\ &= -4x^3 + 36x^2 - 108x + 108\end{aligned}$$

$$\begin{aligned}(4) \quad -2(5x - 1)^3 &= -2(125x^3 - 75x^2 + 15x - 1) \\ &= -250x^3 + 150x^2 - 30x + 2\end{aligned}$$

$$\begin{aligned}(5) \quad -3(x + 2)^3 &= -3(x^3 + 6x^2 + 12x + 8) \\ &= -3x^3 - 18x^2 - 36x - 24\end{aligned}$$

$$\begin{aligned}(6) \quad 2(x - 1)^3 &= 2(x^3 - 3x^2 + 3x - 1) \\ &= 2x^3 - 6x^2 + 6x - 2\end{aligned}$$

$$\begin{aligned}(7) \quad 4(x + 5)^3 &= 4(x^3 + 15x^2 + 75x + 125) \\ &= 4x^3 + 60x^2 + 300x + 500\end{aligned}$$

$$\begin{aligned}(8) \quad 2(4x - 7)^3 &= 2(64x^3 - 336x^2 + 588x - 343) \\ &= 128x^3 - 672x^2 + 1176x - 686\end{aligned}$$

$$\begin{aligned}(9) \quad 4(x - 2)^3 &= 4(x^3 - 6x^2 + 12x - 8) \\ &= 4x^3 - 24x^2 + 48x - 32\end{aligned}$$

$$\begin{aligned}(10) \quad 4(x + 2)^3 &= 4(x^3 + 6x^2 + 12x + 8) \\ &= 4x^3 + 24x^2 + 48x + 32\end{aligned}$$

$$\begin{aligned}(11) \quad (x + 5)^3 &= x^3 + 15x^2 + 75x + 125\end{aligned}$$

$$\begin{aligned}(12) \quad -4(4x - 9)^3 &= -4(64x^3 - 432x^2 + 972x - 729) \\ &= -256x^3 + 1728x^2 - 3888x + 2916\end{aligned}$$

$$\begin{aligned}(13) \quad -4(2x + 5)^3 &= -4(8x^3 + 60x^2 + 150x + 125) \\ &= -32x^3 - 240x^2 - 600x - 500\end{aligned}$$

$$\begin{aligned}(14) \quad -(x + 9)^3 &= -(x^3 + 27x^2 + 243x + 729) \\ &= -x^3 - 27x^2 - 243x - 729\end{aligned}$$

$$\begin{aligned}(15) \quad 4(x + 7)^3 &= 4(x^3 + 21x^2 + 147x + 343) \\ &= 4x^3 + 84x^2 + 588x + 1372\end{aligned}$$

$$\begin{aligned}(16) \quad 3(x - 2)^3 &= 3(x^3 - 6x^2 + 12x - 8) \\ &= 3x^3 - 18x^2 + 36x - 24\end{aligned}$$

$$\begin{aligned}(17) \quad -(3x - 1)^3 &= -(27x^3 - 27x^2 + 9x - 1) \\ &= -27x^3 + 27x^2 - 9x + 1\end{aligned}$$

$$\begin{aligned}(18) \quad -4(5x - 6)^3 &= -4(125x^3 - 450x^2 + 540x - 216) \\ &= -500x^3 + 1800x^2 - 2160x + 864\end{aligned}$$

$$\begin{aligned}(19) \quad (x + 5)^3 &= x^3 + 15x^2 + 75x + 125\end{aligned}$$

$$\begin{aligned}(20) \quad -3(2x - 5)^3 &= -3(8x^3 - 60x^2 + 150x - 125) \\ &= -24x^3 + 180x^2 - 450x + 375\end{aligned}$$