

Section 3.3 #106 $f(x) = x^7 + 10$

⇓

$$\begin{aligned} f'(x) &= \frac{d}{dx}[x^7] + \frac{d}{dx}[10] \\ &= 7x^{7-1} + 0 \\ &= 7x^6 \end{aligned}$$

#107 $f(x) = 5x^3 - x + 1$

⇓

$$\begin{aligned} f'(x) &= \frac{d}{dx}[5x^3] - \frac{d}{dx}[x] + \frac{d}{dx}[1] \\ &= 5 \frac{d}{dx}[x^3] - 1 + 0 \\ &= 5(3x^2) - 1 \\ &= 15x^2 - 1 \end{aligned}$$

#108 $f(x) = 4x^2 - 7x$

⇓

$$\begin{aligned} f'(x) &= \frac{d}{dx}[4x^2] - \frac{d}{dx}[7x] \\ &= 4 \frac{d}{dx}[x^2] - 7 \frac{d}{dx}[x] \\ &= 4(2x) - 7(1) \\ &= 8x - 7 \end{aligned}$$

#109

$$f(x) = 8x^4 + 9x^2 - 1$$

(2)

↓

$$f'(x) = \frac{d}{dx}[8x^4] + \frac{d}{dx}[9x^2] - \frac{d}{dx}[1]$$

$$= 8 \frac{d}{dx}[x^4] + 9 \frac{d}{dx}[x^2] - 0$$

$$= 8(4x^3) + 9(2x)$$

$$= 32x^3 + 18x$$