

Sec. 3.3

p. 147 #1, 2, 5, 7, 8, 10

$$\begin{aligned} \textcircled{1} f'(x) &= x^3(4x) + (2x^2+1)(3x^2) \\ &= 4x^4 + 6x^4 + 3x^2 \\ &= 10x^4 + 3x^2 \end{aligned}$$

$$\begin{aligned} \textcircled{2} f'(x) &= (3x-5)(4x) + (2x^2-3)(3) \\ &= 12x^2 - 20x + 6x^2 - 9 \\ &= 18x^2 - 20x - 9 \end{aligned}$$

$$\begin{aligned} \textcircled{5} h(s) &= (s^{-1/2} + 2s)(1s^{-2}) + (7-s^{-1})(-1/2s^{-3/2} + 2) \\ &= \cancel{s^{-5/2}} + \cancel{2s^{-1}} - 7/2s^{-3/2} + 14 + \cancel{1/2s^{-5/2}} - \cancel{2s^{-1}} \\ &= -7/2s^{-3/2} + 14 = \frac{-7}{2\sqrt{s^3}} + 14 \quad | \quad x=4 \end{aligned}$$

$$\frac{-7}{2\sqrt{4^3}} + 14 = \frac{-7}{2 \cdot 8} + 14 = \frac{-7}{16} + 14 = \frac{217}{16}$$

stop here for AP FR

mult. choice

$$\textcircled{7} f'(x) = \frac{(x-2)(1) - (x)(1)}{(x-2)^2} = \frac{x-2-x}{(x-2)^2} = \frac{-2}{(x-2)^2}$$

$$\textcircled{8} f'(x) = \frac{(x^2+x+1)(1) - (x+4)(2x+1)}{(x^2+x+1)^2}$$

$$\begin{aligned} \text{top} &= x^2+x+1 - (2x^2+x+8x+4) \\ &= x^2+x+1 - 2x^2-9x-4 \\ &= -x^2-8x-3 \end{aligned}$$

$$f'(x) = \frac{-x^2-8x-3}{(x^2+x+1)^2}$$

$$\textcircled{10} \quad w' = \frac{(\sqrt{z} + z)(2z) - (z^2)\left(\frac{1}{2\sqrt{z}} + 1\right)}{(\sqrt{z} + z)^2} \quad \Big| \quad z=9$$

$$\frac{(\sqrt{9} + 9)(2 \cdot 9) - (9^2)\left(\frac{1}{2\sqrt{9}} + 1\right)}{(\sqrt{9} + 9)^2} \quad \text{Free Response}$$

$$\frac{(3+9)(18) - (81)\left(\frac{1}{6} + 1\right)}{(3+9)^2} = \frac{216 - \frac{189}{2}}{144} = \boxed{\frac{27}{32}}$$

mult. choice