

Section 9.5 Solutions 45, 47, 49, 79

$$\begin{aligned} \#45] \frac{d}{dx} \frac{3x^2}{2} - \frac{d}{dx} \frac{7}{5x^2} &= 2\left(\frac{3}{2}\right)x^{2-1} - \frac{d}{dx} \frac{7}{5}x^{-2} = 3x - (-2)\left(\frac{7}{5}\right)x^{-2-1} \\ &= 3x + \frac{14}{5}x^{-3} \end{aligned}$$

$$\begin{aligned} \#47] G(w) &= \frac{5}{9w^4} + 5\sqrt[3]{w} = \frac{5}{9}w^{-4} + 5w^{1/3} \\ G'(w) &= -4\left(\frac{5}{9}\right)w^{-4-1} + \frac{1}{3}(5)w^{1/3-1} = -\frac{20}{9}w^{-5} + \frac{5}{3}w^{-2/3} \end{aligned}$$

$$\begin{aligned} \#49] \frac{d}{du} (3u^{2/3}) - \frac{d}{du} (5u^{1/3}) &= \frac{2}{3}(3)u^{2/3-1} - \frac{1}{3}(5)u^{1/3-1} \\ &= 2u^{-1/3} - \frac{5}{3}u^{-2/3} \end{aligned}$$

$$\begin{aligned} \#79] \frac{d}{dx} \left(\frac{10x+20}{x} \right) &= \frac{d}{dx} 10 + \frac{d}{dx} 20x^{-1} \\ &= 0 + (-1)(20)x^{-1-1} = -20x^{-2} \end{aligned}$$