

Calculus 6.6

# 1-9 odd, 13, 17, 21, 28, 30, 33, 38, 40

$$\begin{aligned} \textcircled{1} \quad dy &= (6x^2 - 5) dx \\ dy &= (24 - 5)(.1) \\ dy &= 1.9 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad dy &= (3x^2 - 4x) dx \\ dy &= (3 - 4)(-.1) \\ dy &= .1 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad y &= (3x+2)^{\frac{1}{2}} \\ dy &= \left( \frac{1}{2\sqrt{3x+2}} \cdot 3 \right) dx \\ dy &= \frac{3}{2(\sqrt{14})} \cdot (.15) = \frac{.45}{2\sqrt{14}} \approx \boxed{.06} \end{aligned}$$

$$\textcircled{7} \quad \frac{dy}{dx} = \frac{2(x+1) - (2x-5)}{(x+1)^2}$$

$$dy = \frac{6 - (-1)}{9} \cdot (-.03) = \frac{7}{9} \cdot -.03 \approx \boxed{-.023}$$

$$\begin{aligned} \textcircled{9} \quad y &= \sqrt{x} \quad x=144 \quad dx=1 \\ dy &= \frac{1}{2\sqrt{x}} \cdot dx \end{aligned}$$

$$dy = \frac{1}{2\sqrt{144}} \cdot 1 = \frac{1}{24} \Rightarrow \sqrt{145} \approx 12\frac{1}{24}$$

$$\begin{aligned} \textcircled{13} \quad y &= e^x \quad x=0 \quad dx=.01 \\ dy &= e^x dx \\ dy &= e^0 \cdot .01 \\ dy &= .01 \end{aligned}$$

$$\boxed{e^{.01} \approx 1.01}$$