

HW Assigned on 10/7 for quiz practice.

$$\begin{aligned} \textcircled{1} \quad y &= (x^2 - 2x)^{1/3} \\ y' &= \frac{1}{3} (x^2 - 2x)^{-2/3} (2x - 2) \\ y' &= \frac{2x - 2}{3(x^2 - 2x)^{2/3}} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad f(x) &= (\cos(1-x))^2 \\ f'(x) &= 2(\cos(1-x))(-\sin(1-x))(-1) \\ f'(x) &= -2\cos(1-x)\sin(1-x) \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad g(x) &= x^2(x^2+1)^{1/2} \\ g'(x) &= x^2 \cdot \frac{1}{2}(x^2+1)^{-1/2}(2x) + (x^2+1)^{1/2}(2x) \end{aligned}$$

$$\begin{aligned} g'(x) &= x^3(x^2+1)^{-1/2} + 2x(x^2+1)^{1/2} \\ g'(x) &= (x^2+1)^{-1/2}(x^3 + 2x(x^2+1)) \\ g'(x) &= \frac{3x^3 + 2x}{\sqrt{x^2+1}} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad h(x) &= \frac{x}{(x^2+1)^{1/2}} \\ h'(x) &= (x^2+1)^{1/2}(1) - (x) \cdot \frac{1}{2}(x^2+1)^{-1/2}(2x) \end{aligned}$$

$$h'(x) = \frac{x^2+1}{(x^2+1)^{1/2}} - x^2(x^2+1)^{-1/2}$$

$$h'(x) = \frac{x^2+1}{(x^2+1)^{1/2}} (x^2+1 - x^2)$$

$$h'(x) = \frac{1}{(x^2+1)^{1/2}(x^2+1)} = \frac{1}{(x^2+1)^{3/2}}$$

$$\begin{aligned} \textcircled{5} \quad y &= (\tan(x^2))^{1/2} \\ y' &= \frac{1}{2} (\tan(x^2))^{-1/2} (\sec^2(x^2))(2x) \end{aligned}$$

$$y' = \frac{x \sec^2(x^2)}{\sqrt{\tan(x^2)}}$$