

Study Guide, sections 3.7 - 3.9

Find the derivative:

$$y = \sqrt{\sec 2x} = (\sec 2x)^{1/2}$$

$$\begin{aligned} \frac{dy}{dx} &= \frac{1}{2} (\sec 2x)^{-1/2} \cdot \sec 2x \tan 2x \cdot 2 \\ &= \frac{\sec 2x \tan 2x}{\sqrt{\sec 2x}} = \tan 2x \sqrt{\sec 2x} \end{aligned}$$

$$\frac{dy}{dx} = \frac{\tan 2x \sqrt{\sec 2x}}{1}$$

$$y = (1 + \csc^3 2x)^5$$

$$\frac{dy}{dx} = 5(1 + \csc^3 2x)^4 (3 \csc^2 2x) (-\csc 2x \cot 2x)$$

$$\begin{aligned} \frac{dy}{dx} &= \frac{-30(1 + \csc^3 2x)^4 (\csc^2 2x) (\csc 2x \cot 2x)}{-30(1 + \csc^3 2x)^4 \cdot \csc^3 2x \cdot \cot 2x} \end{aligned}$$