

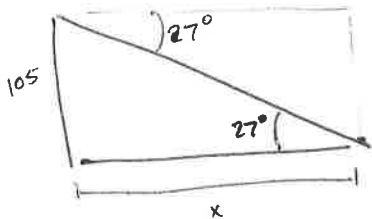
Math 122 HW #12

13.1 #84

13.2 #10, #35

12.7 #8, #39

13.1 #84



$$\tan 27^\circ = \frac{105}{x}$$

$$\begin{aligned} \text{So } x &= 105 / \tan 27^\circ \\ &\approx 206 \quad (\text{calculator}) \end{aligned}$$

13.2 #10

$$y = 2x \sec 4x$$

$$\frac{dy}{dx} = 2x \cdot \sec 4x \tan 4x \cdot 4 + \sec 4x \cdot 2$$

13.2 #35

$$\begin{aligned} \frac{d}{dx} \csc x &= \frac{d}{dx} \frac{1}{\sin x} = \frac{\sin x \cdot 0 - 1 \cdot \cos x}{\sin^2 x} = -\frac{\cos x}{\sin^2 x} = -\frac{\cos x}{\sin x} \cdot \frac{1}{\sin x} \\ &= -\cot x \cdot \csc x \end{aligned}$$

13.2

12.7 #8

$$\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x^2 - x}$$

$$\text{ply in: } \frac{e^0 - 1}{5 \cdot 0^2 - 0} = \frac{1 - 1}{0} = \frac{0}{0}$$

$$\text{L'Hop: } = \lim_{x \rightarrow 0} \frac{2e^{2x}}{10x - 1}$$

$$\text{ply in: } \frac{2e^0}{10 \cdot 0 - 1} = \frac{2}{-1}$$

$$= -2$$

12.7 #39

$$\lim_{x \rightarrow \infty} \frac{\ln(e^x + 1)}{5x}$$

$$\text{ply in: } \frac{\ln(\infty)}{\infty} = \frac{\infty}{\infty}$$

$$\text{L'Hop: } = \lim_{x \rightarrow \infty} \frac{\frac{1}{e^x + 1} \cdot e^x}{5} = \lim_{x \rightarrow \infty} \frac{1}{5} \frac{e^x}{e^x + 1}$$

$$\text{ply in: } \frac{\infty}{\infty}$$

$$\text{L'Hop: } = \lim_{x \rightarrow \infty} \frac{1}{5} \frac{e^x}{e^x} = \lim_{x \rightarrow \infty} \frac{1}{5} = \frac{1}{5}$$