

3a. Compute $\frac{d}{dx} \sin(x + \sin(x + \sin x))$.

$$\frac{d}{dx} \sin(x + \sin(x + \sin x))$$

$$= \cos(x + \sin(x + \sin x)) \cdot (1 + \cos(x + \sin x) \cdot (1 + \cos x))$$

3b. Find an equation for the tangent line to the graph of $y = \tan\left(\frac{\pi}{\sqrt{25-x^2}}\right)$ at the point with $x = 3$.

$$y' = \sec^2\left(\frac{\pi}{\sqrt{25-x^2}}\right) \cdot \pi \cdot \left(-\frac{1}{2}\right) (25-x^2)^{-3/2} \cdot (-2x)$$

$$y'|_{x=3} = \sec^2\frac{\pi}{4} \cdot \pi \cdot \frac{1}{64} \cdot 3 = \frac{3\pi}{32}$$

$$y|_{x=3} = \tan\frac{\pi}{4} = 1$$

An equation for the tangent line is:

$$y - 1 = \frac{3\pi}{32} \cdot (x - 3)$$