

$$f(x) = -2\sin x \quad \text{e } x = \frac{3}{4}\pi$$

$$\begin{aligned} f\left(\frac{3\pi}{4}\right) &= -2\sin\left(\frac{3\pi}{4}\right) \\ &= -2 \cdot \frac{\sqrt{2}}{2} = -\sqrt{2} \end{aligned}$$

$$\begin{aligned} y + \sqrt{2} &= \sqrt{2} \left(x - \frac{3}{4}\pi\right) \\ y &= \sqrt{2}x - \frac{3}{4}\pi\sqrt{2} - \sqrt{2} \\ &= \sqrt{2}x - \sqrt{2} \left(\frac{3}{4}\pi - 1\right) \end{aligned}$$

$$f'(x) = -2\cos x$$

$$\begin{aligned} f'\left(\frac{3\pi}{4}\right) &= -2\cos\left(\frac{3\pi}{4}\right) \\ &= -2 \cdot -\frac{\sqrt{2}}{2} = \sqrt{2} \end{aligned}$$

$$f(x) = -3\cos x \quad x = \frac{3\pi}{4}$$

$$f\left(\frac{3\pi}{4}\right) = -3\cos\left(\frac{3\pi}{4}\right) = -3 \cdot -\frac{\sqrt{2}}{2} = \frac{3\sqrt{2}}{2}$$

$$f'(x) = 3\sin x$$

$$f'\left(\frac{3\pi}{4}\right) = 3\sin\left(\frac{3\pi}{4}\right) = 3\frac{\sqrt{2}}{2}$$

$$y - \frac{3\sqrt{2}}{2} = \frac{3\sqrt{2}}{2} \left(x - \frac{3\pi}{4}\right)$$

$$\frac{d}{dx}(\sin x) = \cos x$$

$$\frac{d}{dx}(\cos x) = -\sin x$$

$$\frac{d}{dx}(\tan x) = \sec^2 x$$

$$\frac{d}{dx}(\cot x) = -\csc^2 x$$

$$\frac{d}{dx}(\sec x) = \sec x \tan x$$

$$\frac{d}{dx}(\csc x) = -\csc x \cot x$$

$$\tan x = \frac{\sin x}{\cos x}$$

$$\begin{aligned} \frac{d}{dx} \left(\frac{\sin x}{\cos x} \right) &= \frac{\cos x \cdot \cos x - \sin x \cdot (-\sin x)}{\cos^2 x} = \frac{\cos^2 x + \sin^2 x}{\cos^2 x} \\ &= \frac{1}{\cos^2 x} = \sec^2 x \end{aligned}$$

$$\sec x = \frac{1}{\cos x}$$

$$\begin{aligned} \frac{d}{dx} \left(\frac{1}{\cos x} \right) &= \frac{\cos x \cdot 0 - 1 \cdot (-\sin x)}{\cos^2 x} = \frac{\sin x}{\cos^2 x} = \frac{\sin x}{\cos x} \cdot \frac{1}{\cos x} \\ &= \sec x \tan x \end{aligned}$$