

14. $y = x^2 - 4$

FIND POINT FOR HORIZONTAL TANGENT LINE

① FIND DERIVATIVE

$$y' = 2x$$

② SET THIS EQUAL TO ZERO AND SOLVE

$$2x = 0$$

$$\frac{2x}{2} = \frac{0}{2}$$

$$x = 0$$

③ PLUG THIS X-VALUE(S) INTO ORIGINAL FUNCTION AND FIND THE y-VALUE(S)

$$x = 0$$

$$y = x^2 - 4$$

$$y = 0^2 - 4$$

$$y = -4$$

$$(0, -4)$$

15. $y = \sqrt{3}x - 2\sin x \quad 0 \leq x < 2\pi$

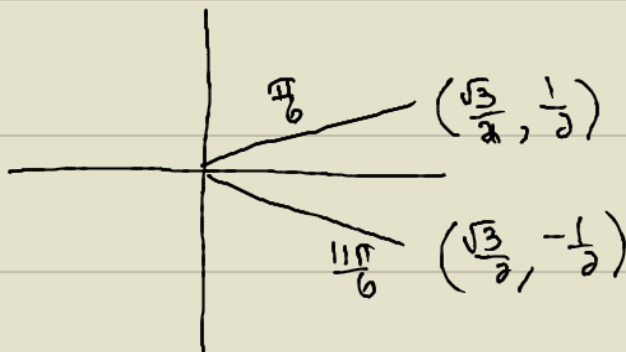
① $y' = \sqrt{3} - 2\cos x$

② $\sqrt{3} - 2\cos x = 0$

$$\sqrt{3} = 2\cos x$$

$$\frac{\sqrt{3}}{2} = \cos x$$

$$x = \frac{\pi}{6}, \frac{11\pi}{6}$$



③ $x = \frac{\pi}{6}$

$$y = \sqrt{3}\left(\frac{\pi}{6}\right) - 2\sin\frac{\pi}{6}$$

$$y = \frac{\sqrt{3}\pi}{6} - 2\left(\frac{1}{2}\right)$$

$$x = \frac{11\pi}{6}$$

$$y = \sqrt{3}\left(\frac{11\pi}{6}\right) - 2\sin\frac{11\pi}{6}$$

$$y = \frac{11\pi\sqrt{3}}{6} - 2\left(-\frac{1}{2}\right)$$

$$y = \frac{\sqrt{3}\pi}{6} - 1$$

$$y = \frac{-6 + \sqrt{3}\pi}{6}$$

$$\left(\frac{\pi}{6}, \frac{-6 + \sqrt{3}\pi}{6}\right)$$

$$y = \frac{11\pi\sqrt{3}}{6} + 1$$

$$= \frac{6 + 11\pi\sqrt{3}}{6}$$

$$\left(\frac{11\pi}{6}, \frac{6 + 11\pi\sqrt{3}}{6}\right)$$