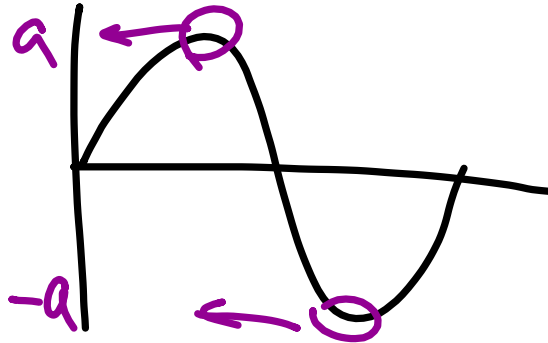
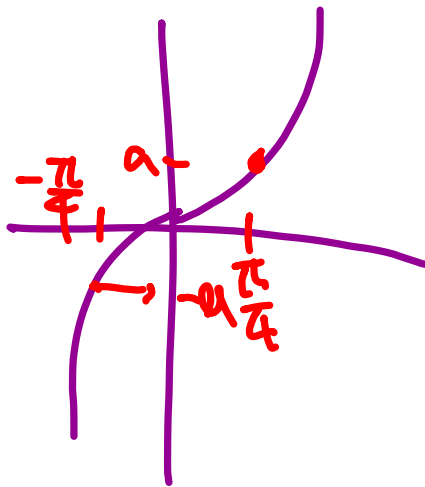


$$41. y = 3 \tan x$$

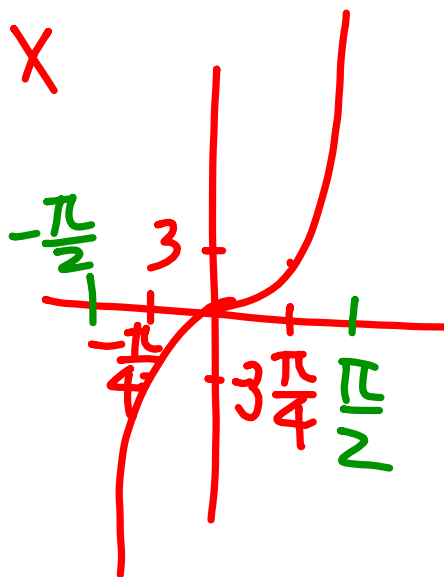
$$y = a \sin x$$



$$y = a \tan x$$



$$y = 3 \tan x$$



$$pd: \frac{\pi}{b}$$

$$y = a \tan(bx)$$

$$pd: \pi$$

25. If $\tan t = \frac{1}{4}$ and the terminal point for t is in quadrant III, find $\sec t + \cot t$.

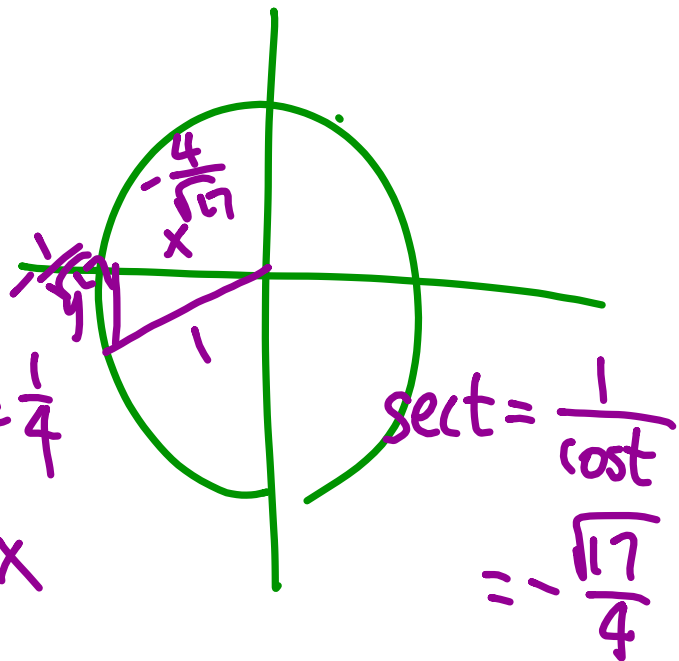
$$-\frac{\sqrt{17}}{4} + 4$$

$$= \frac{16 - \sqrt{17}}{4}$$

$$\left. \begin{aligned} 16y^2 + 4y^2 &= 1 \\ y^2 &= \frac{1}{17} \end{aligned} \right\} x^2 + y^2 = 1$$

$$\frac{y}{x} = \frac{1}{4}$$

$$4y = x$$



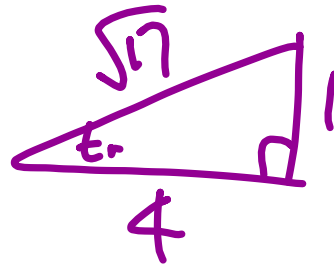
$$y = \pm \frac{1}{\sqrt{17}}$$

$$x = \pm \frac{4}{\sqrt{17}}$$

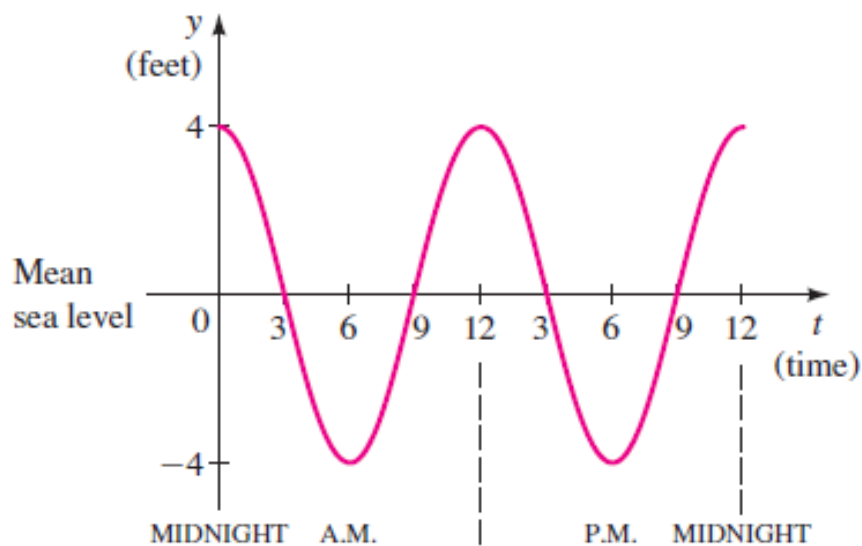
25. If $\tan t = \frac{1}{4}$ and the terminal point for t is in quadrant III,
find $\sec t + \cot t$.

⊖ ⊕

$$-\frac{\sqrt{17}}{4} + 4$$



67. The graph shows the variation of the water level relative to mean sea level in the Long Beach harbor for a particular 24-hour period. Assuming that this variation is simple harmonic, find an equation of the form $y = a \cos \omega t$ that describes the variation in water level as a function of the number of hours after midnight.



$$a = 4$$

$$P = 12 = \frac{2\pi}{\omega}$$

$$\omega = \frac{\pi}{6}$$

$$y = 4 \cos\left(\frac{\pi}{6}t\right)$$

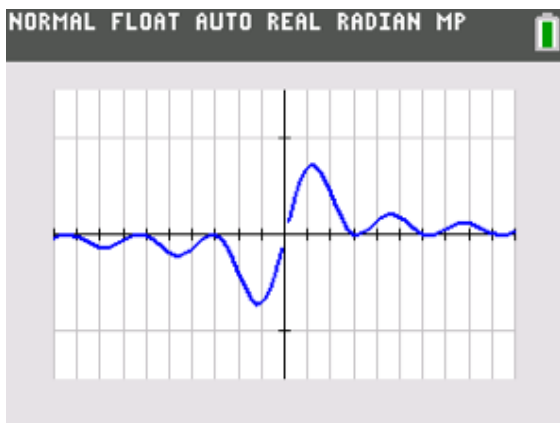
63. Let $f(x) = \frac{\sin^2 x}{x}$.

- Is the function f even, odd, or neither?
- Find the x -intercepts of the graph of f .
- Graph f in an appropriate viewing rectangle.
- Describe the behavior of the function as x becomes large.
- Notice that $f(x)$ is not defined when $x = 0$. What happens as x approaches 0?

$$\Downarrow \quad 0 \leq \frac{\sin^2 x}{x} \leq \frac{1}{x}$$

as $x \rightarrow \infty$ \downarrow

$$0 \leq 0 \leq 0$$



19. $\tan t$, $\sin t$; t in quadrant IV

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

$$= \frac{\sin t}{\sqrt{1 - \sin^2 t}}$$

$$\begin{aligned}\sin t &< 0 \\ \tan t &< 0 \\ \cos t &> 0\end{aligned}$$

$$17. \frac{\tan t}{\cos t}, \sin t$$

$$\frac{\tan t}{\cos t} = \frac{\frac{\sin t}{\cos t}}{\cos t} = \frac{\sin t}{\cos^2 t} = \frac{\sin t}{1 - \sin^2 t}$$