

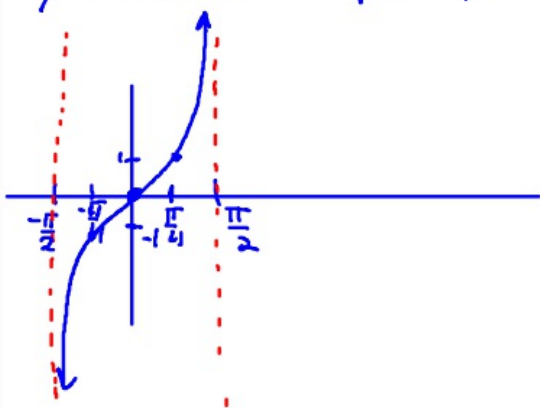
Per  $\frac{\pi}{B}$

tan always goes through origin  
 $\frac{1}{2}$  Period Right  
 $\frac{1}{2}$  Period Left

$$y = A \tan B(x-c) + D$$

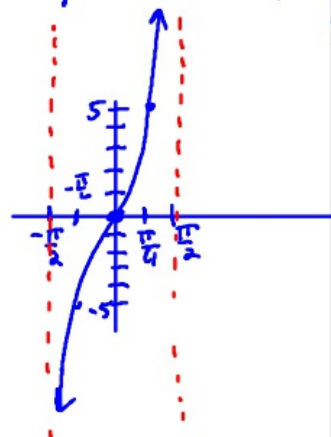
$$y = \tan x$$

Amp = 1  
 Per =  $\frac{\pi}{1} = \pi$



$$y = 5 \tan x$$

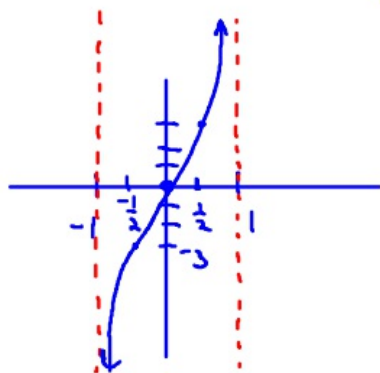
Amp = 5  
 Per =  $\frac{\pi}{1} = \pi$



$$y = 3 \tan \frac{\pi}{2} x$$

Amp = 3

Per  $\frac{\pi}{B} = \frac{\pi}{\frac{\pi}{2}} = 2$

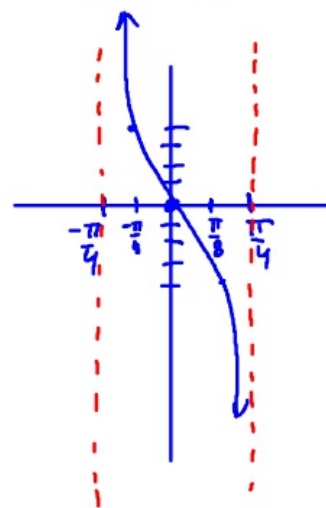


$$y = -4 \tan 2x$$

Reflection over x-axis

Amp = 4

Per =  $\frac{\pi}{B} = \frac{\pi}{2}$



What you will learn about:  
Writing Equations of Sine and Cosine Functions

Write an equation for the cosine curve.

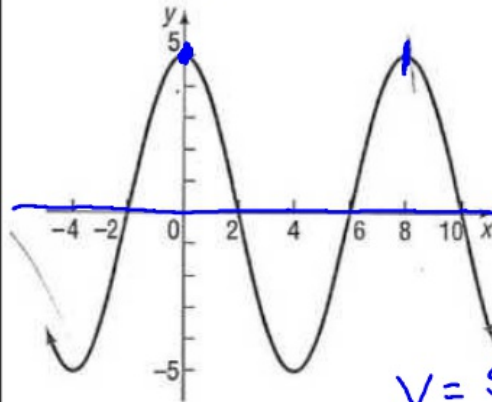
$$y = A \cos B(x - c) + D$$

$$\text{Per} = 8$$

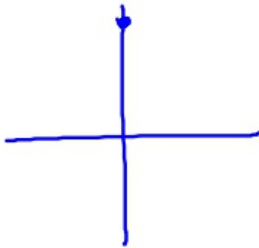
$$B = \frac{2\pi}{\text{Per}}$$

$$= \frac{2\pi}{8} = \frac{\pi}{4}$$

$$A = 5$$



$$y = 5 \cos \frac{\pi}{4} x$$



$$y = 2 \cos \frac{3\pi}{2} \left(x + \frac{2}{3}\right)$$

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

$$y = -2 \cos \frac{3\pi}{2} x$$

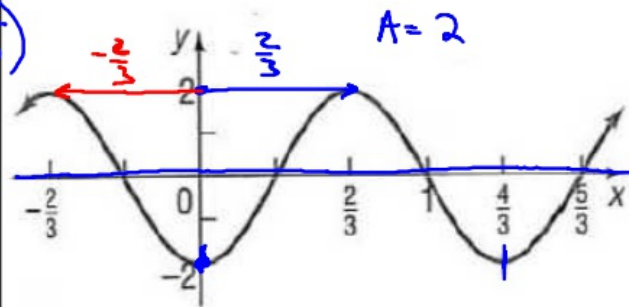
$$y = A \cos B(x - c) + D$$

$$B = \frac{2\pi}{\text{Per}}$$

$$\frac{2\pi}{\frac{4}{3}}$$

$$\frac{2\pi}{1} \cdot \frac{3}{4} = \frac{3\pi}{2}$$

$$\frac{2\pi}{1} \cdot \frac{3}{4} = \frac{3\pi}{2}$$



$$A = 2$$

$$y = A \sin B(x - c) + D$$

Write an equation for the sine curve.

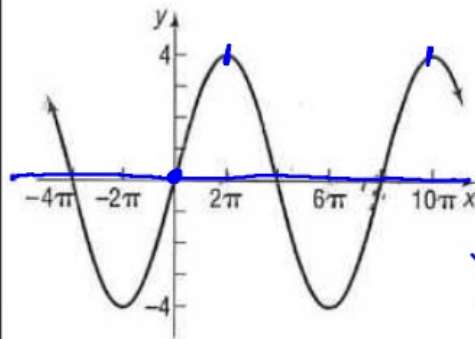
$$\text{Amp} = 4$$

$$\frac{\text{max} - \text{min}}{2}$$

$$\text{Per} = 8\pi$$

$$B = \frac{2\pi}{\text{Per}}$$

$$= \frac{2\pi}{8\pi} = \frac{1}{4}$$

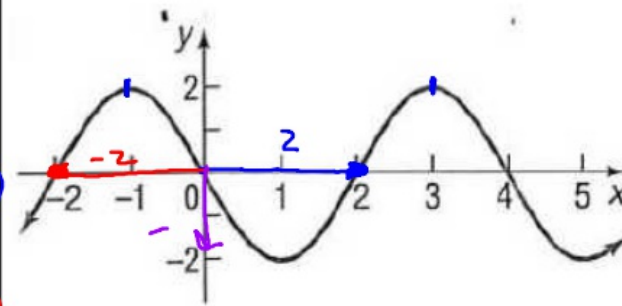


$$y = 4 \sin \frac{1}{4}x$$

$$y = 2 \sin \frac{\pi}{2}(x - 2)$$

$$y = 2 \sin \frac{\pi}{2}(x + 2)$$

$$y = -2 \sin \frac{\pi}{2}x$$



$$\text{Per} = 4$$

$$B = \frac{2\pi}{\text{Per}}$$

$$= \frac{2\pi}{4} = \frac{\pi}{2}$$

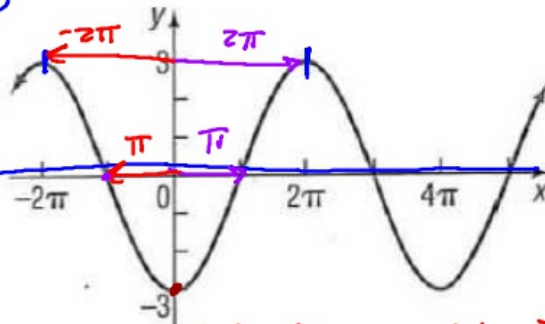
$$\text{Amp} = 2$$

$$y = A \cos B(x-c) + D$$

$$y = A \sin B(x-c) + D$$

A, B, D will  
Always be same

Write an equation for the graph as both a sine and cosine curve.



$$y = -3 \sin \frac{1}{2}(x + \pi)$$

$$y = 3 \sin \frac{1}{2}(x - \pi)$$

$$y = 3 \cos \frac{1}{2}(x + 2\pi)$$

$$y = 3 \cos \frac{1}{2}(x - 2\pi)$$

$$y = -3 \cos \frac{1}{2}x$$

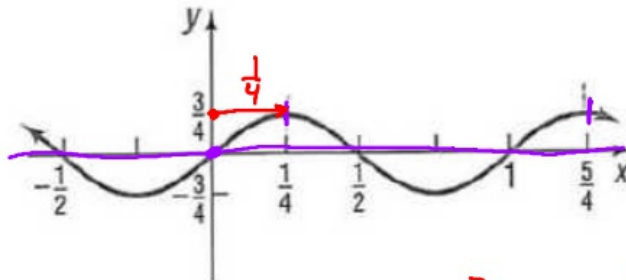
$$D = 0$$

$$\text{Amp} = 3$$

$$\text{Per} = 4\pi$$

$$B = \frac{2\pi}{\text{Per}}$$

$$\frac{2\pi}{4\pi} = \frac{1}{2}$$



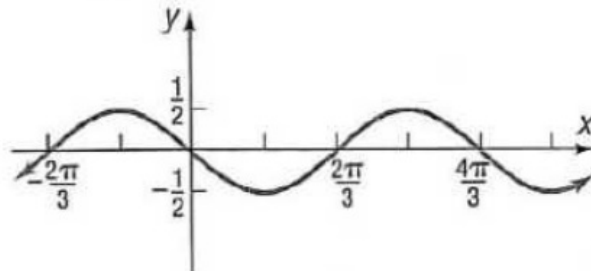
$$y = \frac{3}{4} \sin 2\pi x$$

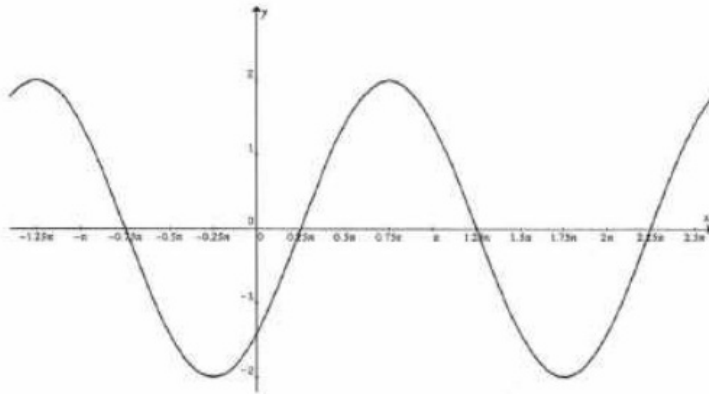
$$y = \frac{3}{4} \cos 2\pi(x - \frac{1}{4}) \quad \text{Amp} = \frac{3}{4}$$

$$\text{Per} = 1$$

$$B = \frac{2\pi}{\text{Per}}$$

$$= \frac{2\pi}{1} = 2\pi$$



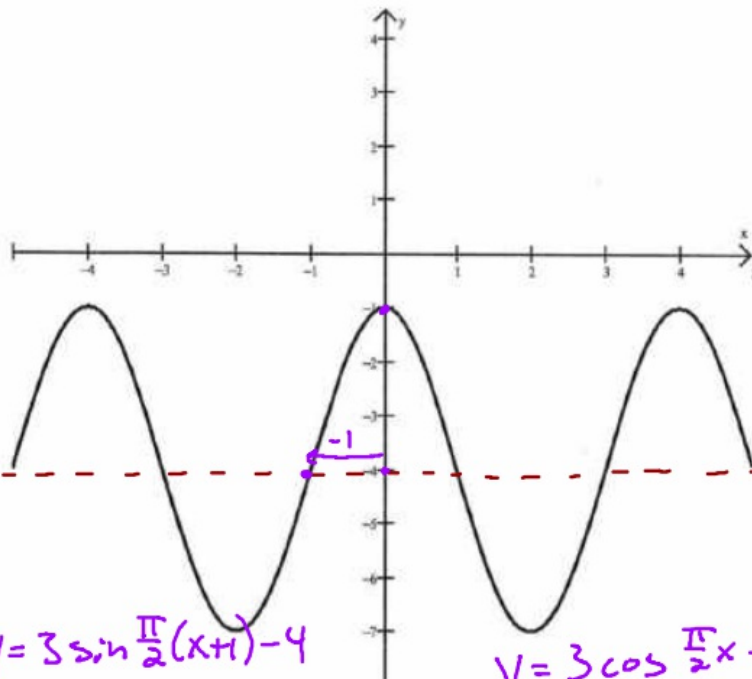


$$D = -4$$

$$\text{Per} = 4$$

$$B = \frac{2\pi}{4} = \frac{\pi}{2}$$

$$\text{Amp} = 3$$



$$\frac{\text{MAX} - \text{min}}{2}$$

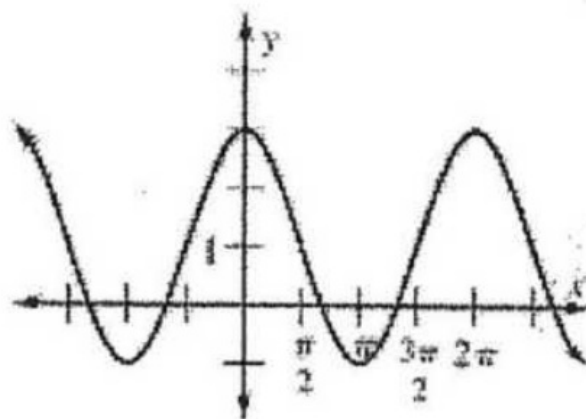
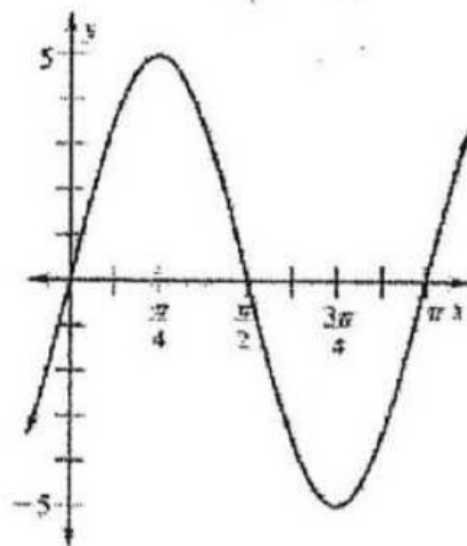
$$\frac{-1 - (-7)}{2}$$

$$\frac{6}{2} = 3$$

$$y = 3 \sin \frac{\pi}{2}(x+1) - 4$$

$$y = -3 \sin \frac{\pi}{2}(x-1) - 4$$

$$y = 3 \cos \frac{\pi}{2}x - 4$$

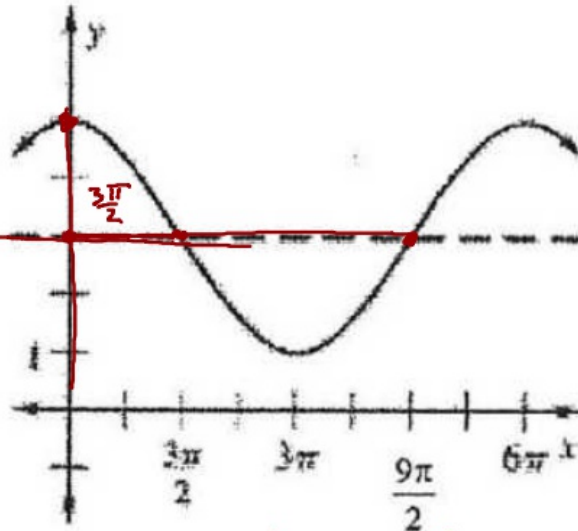


$$D = \text{up } 3$$

$$A = 2$$

$$\text{Per} = 6\pi$$

$$\omega = \frac{2\pi}{6\pi} = \frac{1}{3}$$



$$y = -2 \sin \frac{1}{3} \left( x - \frac{3\pi}{2} \right) + 3$$

$$y = 2 \cos \frac{1}{3} x + 3$$

