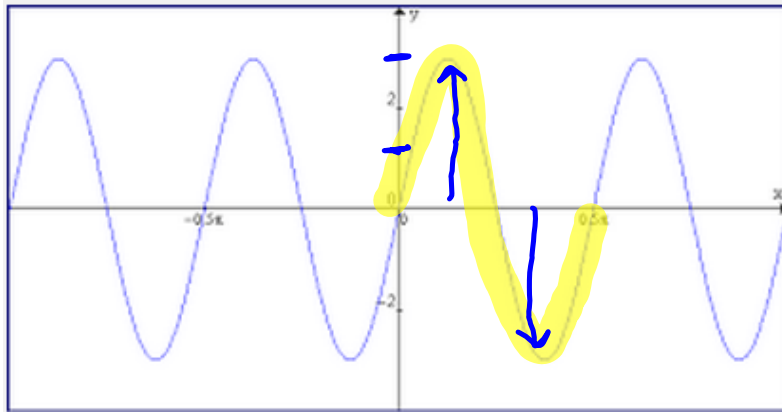


5.3 Part 3 Writing Equations of Trig Functions from Graphs

Example 1

Write the equation that corresponds with the given graph.

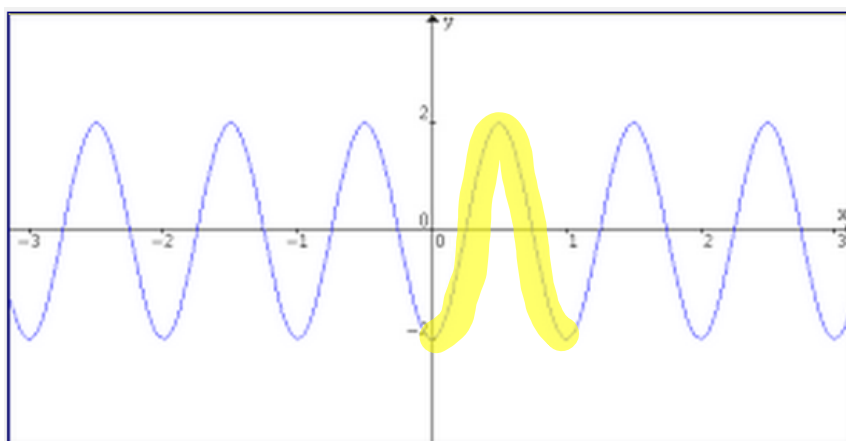


$$y = 3 \sin 4x$$

$ps = \emptyset$
 $vs = \emptyset$
 $amp = 3$
 $per = \frac{1}{2}$
 $\frac{2\pi}{k} = \frac{1}{2}$
 $\frac{\pi k}{\pi} = \frac{4\pi}{\pi}$
 $k = 4$

Example 2

Write the equation that corresponds with the given graph.



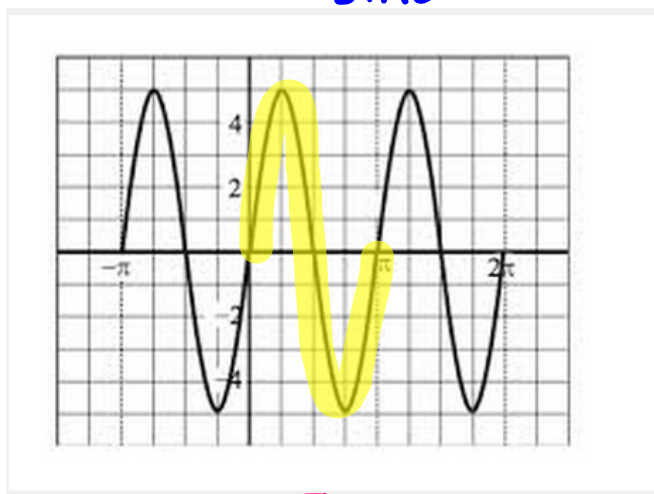
$$y = -2 \cos 2\pi x$$

reflection
 $ps = \emptyset$
 $vs = \emptyset$
 $amp = -2$
 $per = 1$
 $k \cdot \frac{2\pi}{k} = 1 \cdot k$
 $2\pi = k$

Example 3

Write the equation that corresponds with the given graph.

sine



$$y = 5 \sin 2x$$

$$ps = \emptyset$$

$$vs = \emptyset$$

$$\text{amp} = 5$$

$$\text{per} = \pi$$

$$k \cdot \frac{2\pi}{k} = \pi \cdot k$$

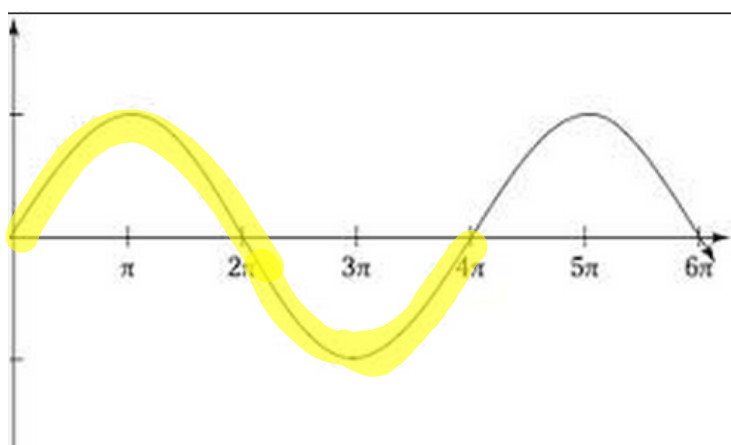
$$\frac{2\pi}{\pi} = \frac{\pi k}{\pi}$$

$$2 = k$$

Example 4

Write the equation that corresponds with the given graph.

sine



$$y = \sin \frac{1}{2}x$$

$$ps = \emptyset$$

$$vs = \emptyset$$

$$\text{amp} = 1$$

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

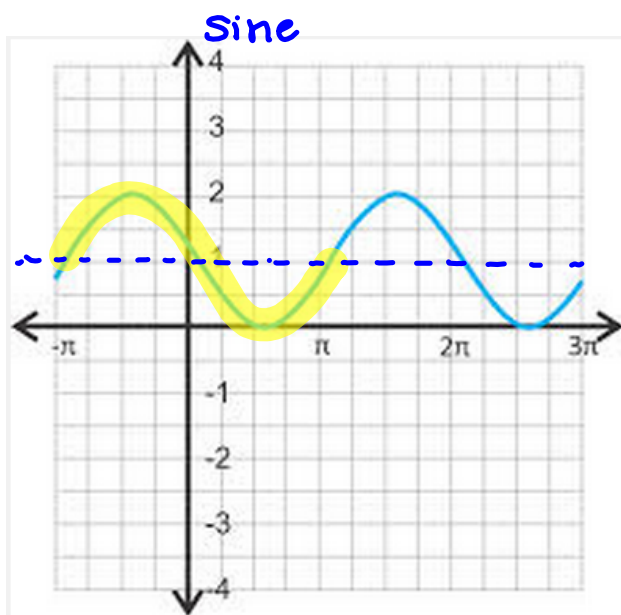
$$k \cdot \frac{2\pi}{k} = 4\pi \cdot k$$

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

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

Example 5

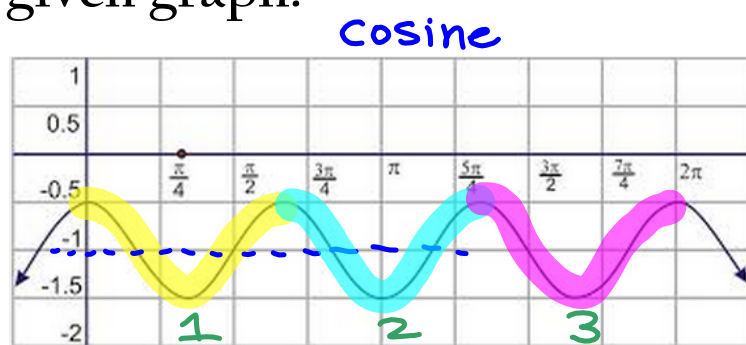
Write the equation that corresponds with the given graph.



$ps = \pi$ left ($+\pi$)
 $vs = 1$ up
 $amp = 1$
 $per = 2\pi$
 $k = 1$
 $y = \sin(x + \pi) + 1$

Example 6

Write the equation that corresponds with the given graph.

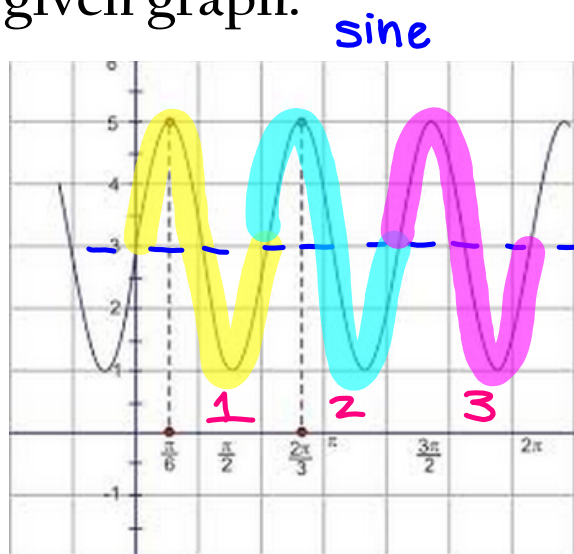


$y = .5 \cos 3x - 1$

$ps = \emptyset$
 $vs = 1$ down
 $amp = .5$
 $per = ?$
 $k = 3$

Example 7

Write the equation that corresponds with the given graph.

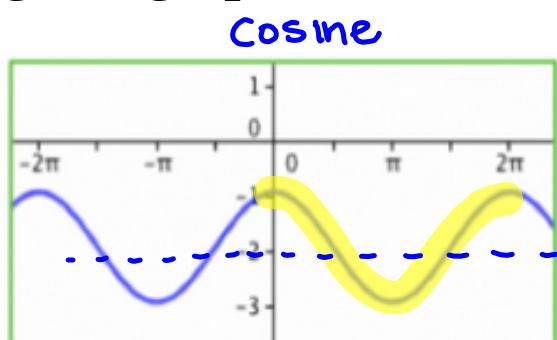


$$\begin{aligned} ps &= \emptyset \\ vs &= vp \ 3 \\ amp &= 2 \\ per &= ? \\ k &= 3 \end{aligned}$$

$$y = 2 \sin 3x + 3$$

Example 8

Write the equation that corresponds with the given graph.

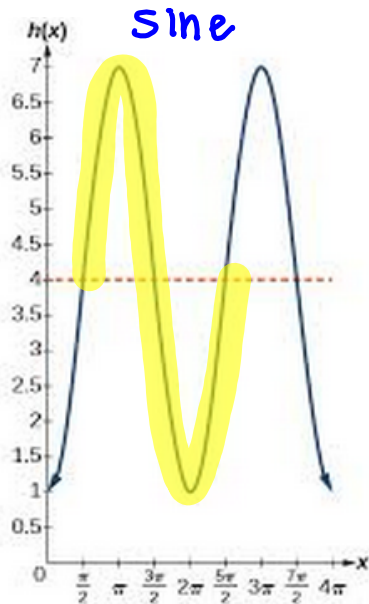


$$\begin{aligned} ps &= \emptyset \\ vs &= 2 \text{ down} \\ amp &= 1 \\ per &= 2\pi \\ k &= 1 \end{aligned}$$

$$y = \cos x - 2$$

Example 9

Write the equation that corresponds with the given graph.



$$ps = \frac{\pi}{2} \text{ right}$$

$$vs = 4 \text{ up}$$

$$\text{amp} = 3$$

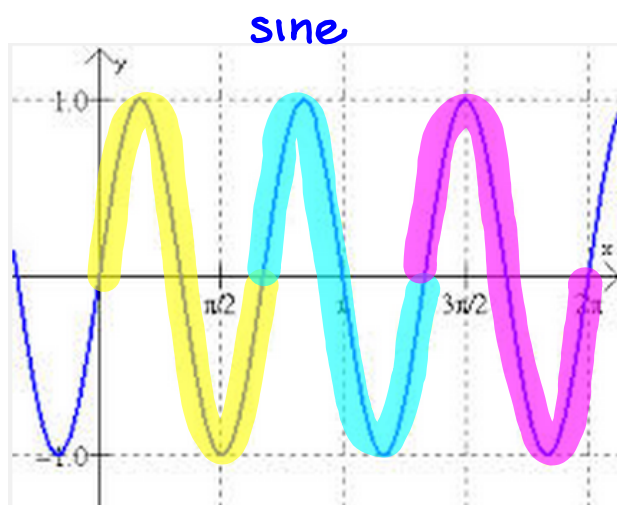
$$\text{per} = 2\pi$$

$$k = 1$$

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

Example 10

Write the equation that corresponds with the given graph.



$$ps = \emptyset$$

$$vs = \emptyset$$

$$\text{amp} = 1$$

$$\text{per} = ?$$

$$k = 3$$

$$y = \sin 3x$$