

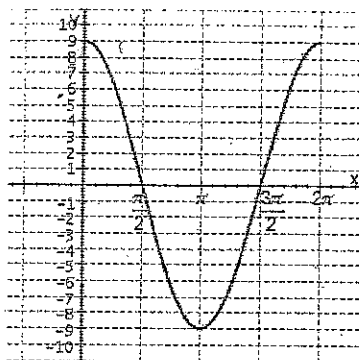
$$y = A \sin(Bx - C) + D$$

Name \_\_\_\_\_

### Finding the Equation given the graph

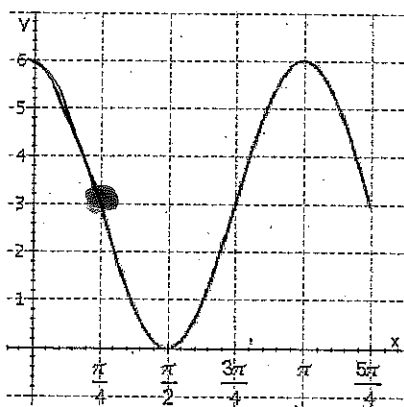
Directions for all graphs: The graph below is one complete cycle of the graph of an equation containing a trigonometric function. Find an equation to match the graph. If you are using a graphing calculator, graph your equation to verify that it is correct.

1.



$$y = 9 \cos(x)$$

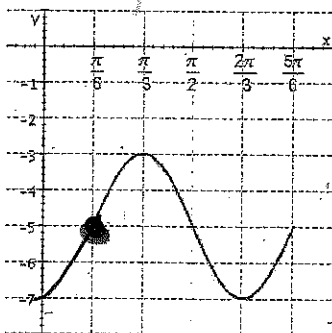
2.



$$y = 3 \cos(2x) + 3$$

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

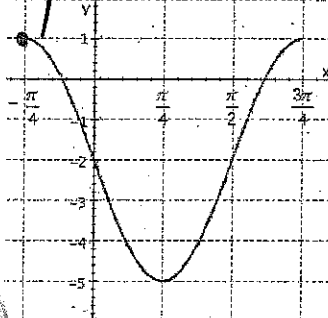
3.



$$y = 2 \sin(3x - \frac{\pi}{2}) - 5$$

4.

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



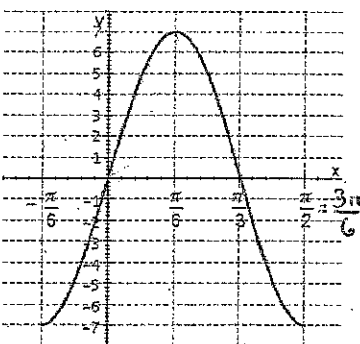
$$\frac{2\pi}{B} = \pi$$

$$B = 2$$

$$2(-\frac{\pi}{4}) - C = 0$$

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

5.



$$\frac{2\pi}{B} = \frac{4\pi}{6}$$

$$12\pi = 4\pi B$$

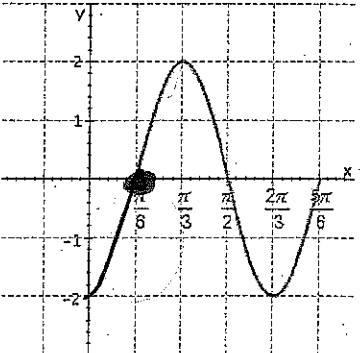
$$3 = B$$

$$C = 3(-\frac{\pi}{6})$$

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

6.

$$y = -7 \cos(3x + \frac{\pi}{2})$$



$$P = \frac{4\pi}{6}$$

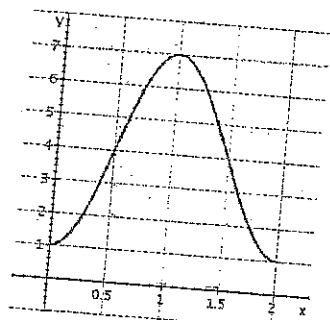
$$B = 3$$

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

7.

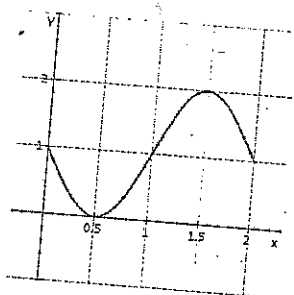
$$2 = \frac{2\pi}{B}$$

$$B = \pi$$



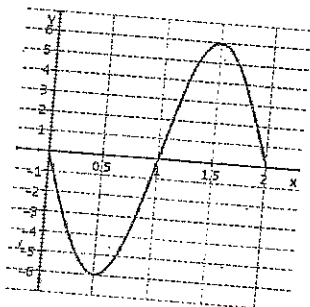
8.

$$y = -3\cos(\pi x) + 4$$



$$y = -\sin(\pi x) + 1$$

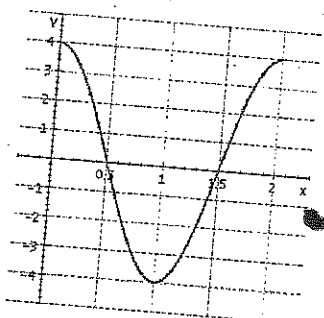
9.



$$y = -6\sin(\pi x)$$

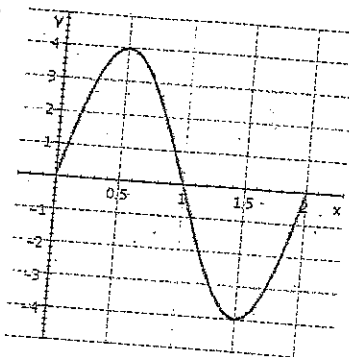
13

10.



$$y = 4\cos(\pi x)$$

11

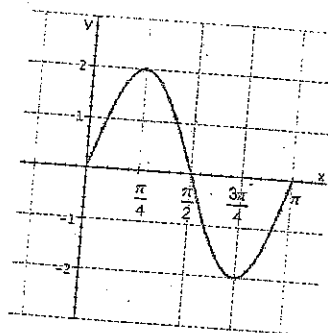


$$2 = \frac{2\pi}{B}$$

$$B = \pi$$

12

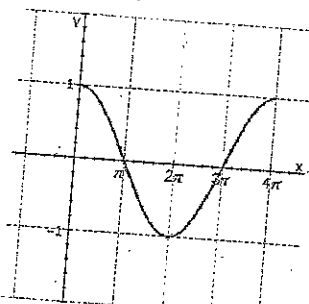
$$y = 4\sin(\pi x)$$



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

$$B = 2$$

$$y = 2\sin(2x)$$

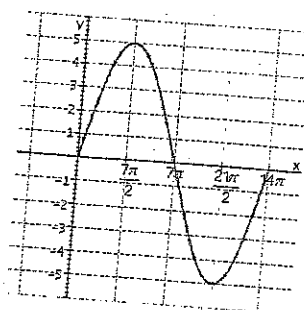


$$4\pi = \frac{2\pi}{B}$$

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

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

14



$$14\pi = \frac{2\pi}{B}$$

$$B = \frac{2\pi}{14\pi} = \frac{1}{7}$$

$$5\sin(\frac{1}{7}x)$$