

## 9.4B WS - Graphing Sine & Cosine (Putting It All Together)

$$y = a \sin b(x - h) + k \quad \text{and} \quad y = a \cos b(x - h) + k$$

Fill in the blanks and graph the function over the interval  $-2\pi \leq x \leq 2\pi$ . Draw in horizontal lines to represent the midline and maximum and minimum values of the graph.

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

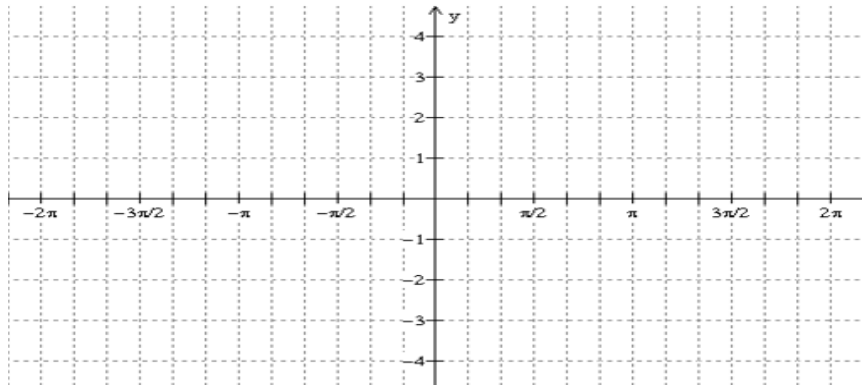
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations:

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

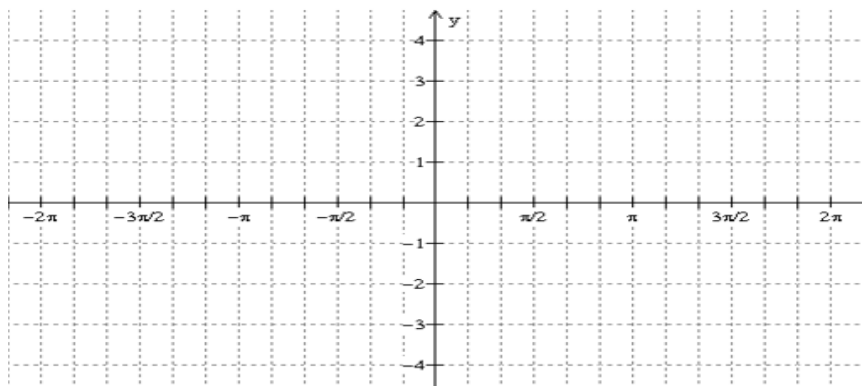
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations:

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

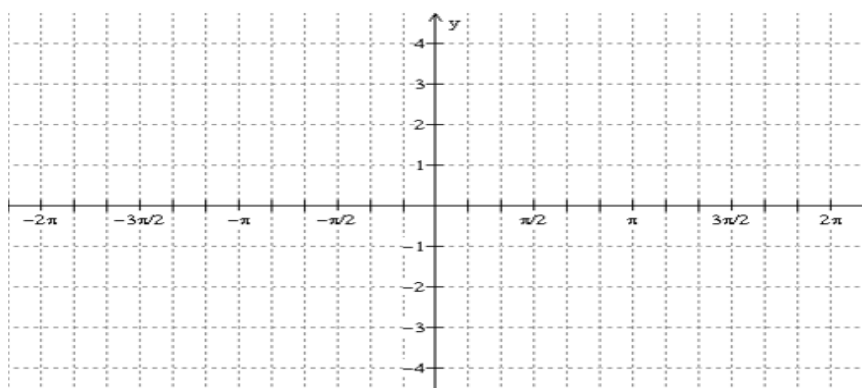
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations:

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

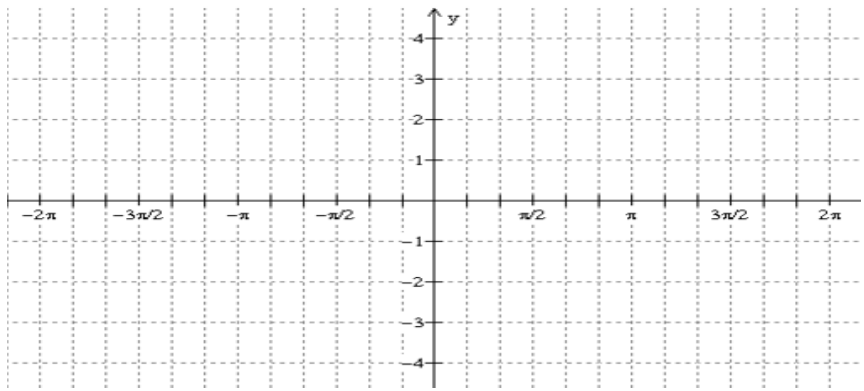
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations:

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

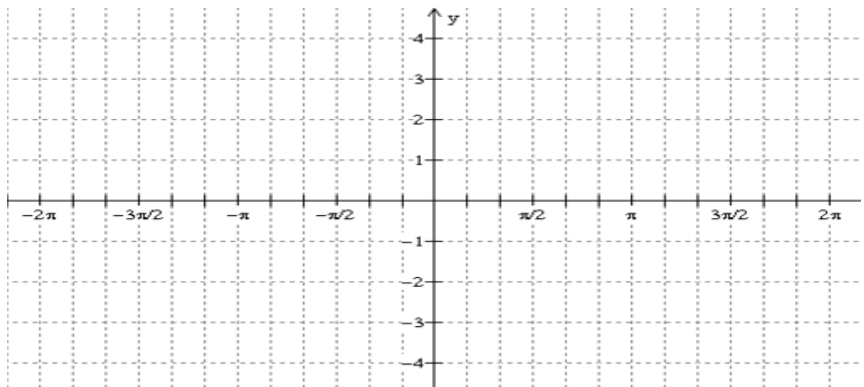
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations:

6.  $y = 3\cos 4\left(x + \frac{\pi}{3}\right) - 1$

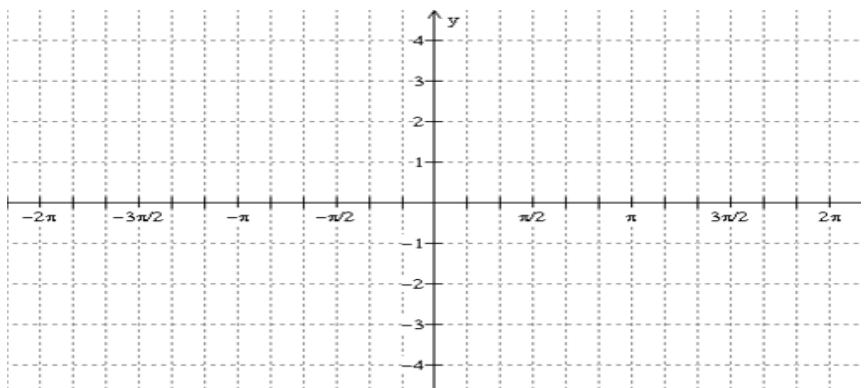
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Phase shift: \_\_\_\_\_

Vertical shift: \_\_\_\_\_

Range: \_\_\_\_\_



Describe the transformations: