

For each function, state the amplitude, if there is a reflection, the phase shift and the vertical shift. Write "none" for transformations that do not exist.

Then graph the function.

Step #1: Start by graphing the parent function  $y = \sin \theta$  if there is no period change (b).

If there is a period change, find the new intervals first, then graph the parent graph as usual.

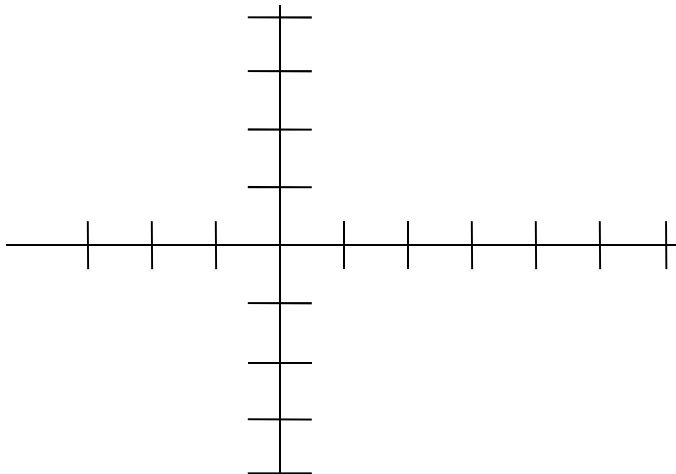
Step #2: Write the transformations IN THE ORDER IN WHICH THEY OCCUR

Step #3: Graph each transformation – one at a time, use more than one color!!!

Step #4: Label your final graph.

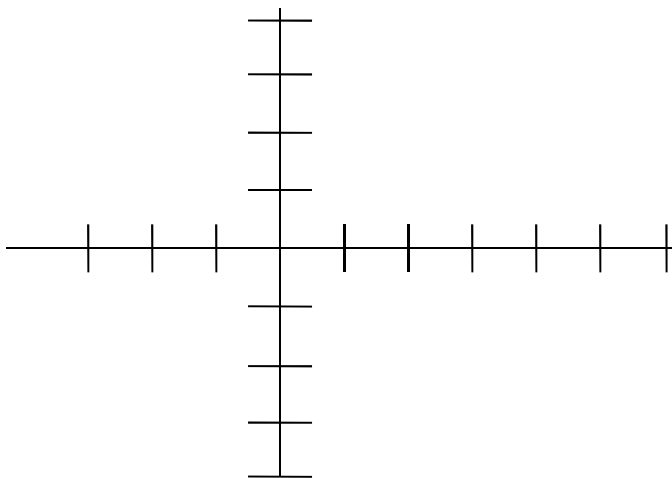
1.  $y = \frac{2}{3} \sin x$

Period: \_\_\_\_\_  
 Amplitude: \_\_\_\_\_  
 Reflection: \_\_\_\_\_  
 Phase Shift: \_\_\_\_\_  
 Vertical Shift: \_\_\_\_\_  
Transformations:



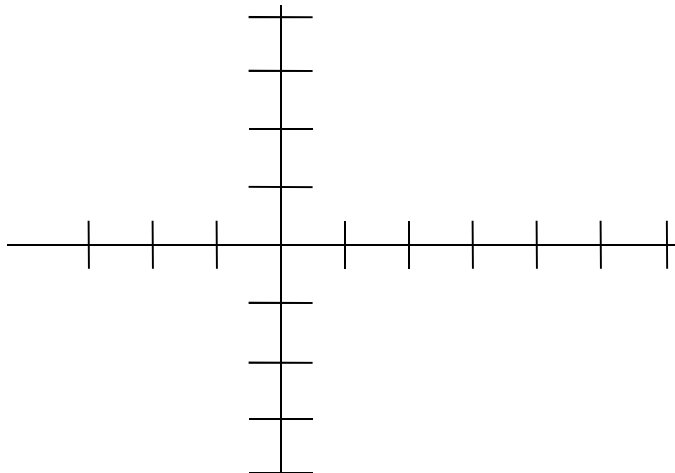
2.  $y = 4 \sin \pi x$

Period: \_\_\_\_\_  
 Amplitude: \_\_\_\_\_  
 Reflection: \_\_\_\_\_  
 Phase Shift: \_\_\_\_\_  
 Vertical Shift: \_\_\_\_\_  
Transformations:



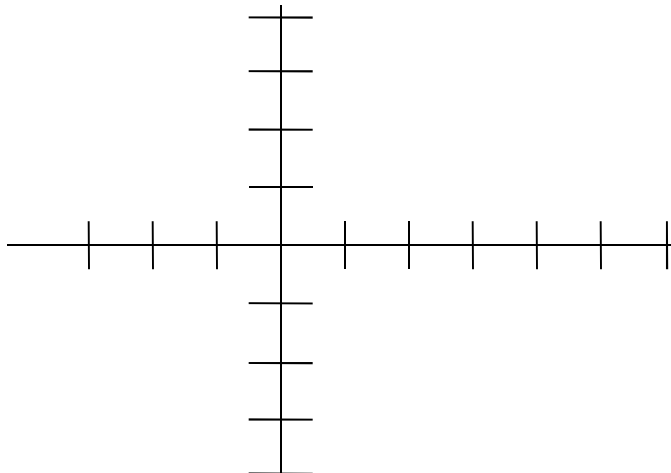
3.  $y = 2 \sin \frac{1}{2} x$

Period: \_\_\_\_\_  
 Amplitude: \_\_\_\_\_  
 Reflection: \_\_\_\_\_  
 Phase Shift: \_\_\_\_\_  
 Vertical Shift: \_\_\_\_\_  
Transformations:



4.  $y = \sin x + 3$

Period: \_\_\_\_\_  
 Amplitude: \_\_\_\_\_  
 Reflection: \_\_\_\_\_  
 Phase Shift: \_\_\_\_\_  
 Vertical Shift: \_\_\_\_\_  
Transformations:



5.  $y = \sin\frac{1}{2}x - 4$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

6.  $y = \sin\left(x - \frac{\pi}{4}\right)$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

7.  $y = -\sin\frac{1}{2}x + 3$

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

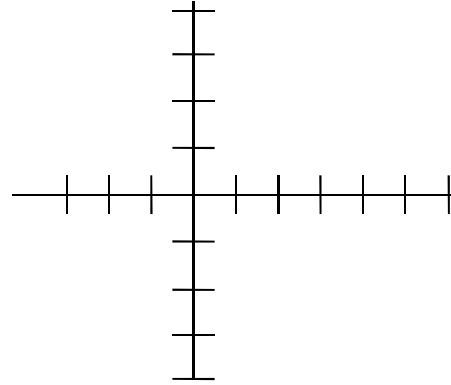
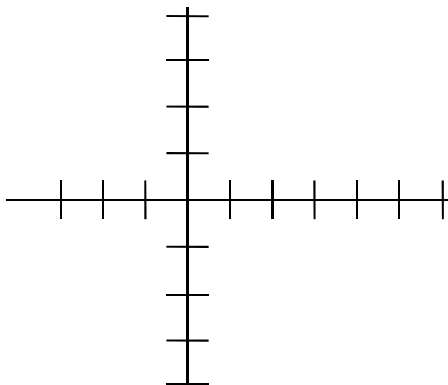
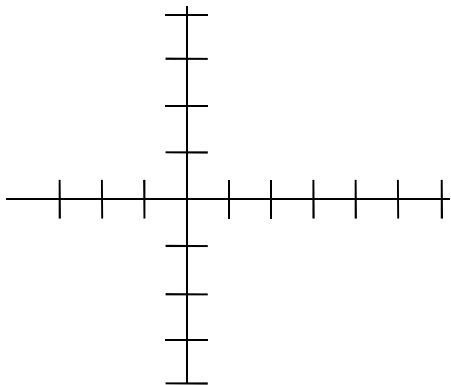
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



8.  $y = -2\sin(x - \pi)$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

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

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

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

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

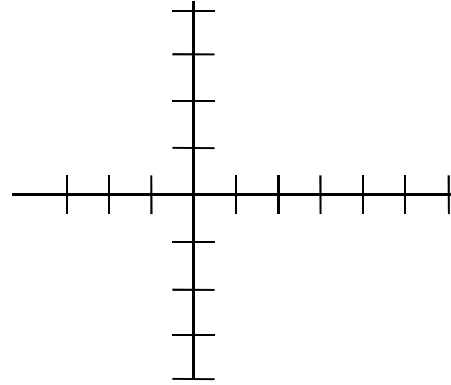
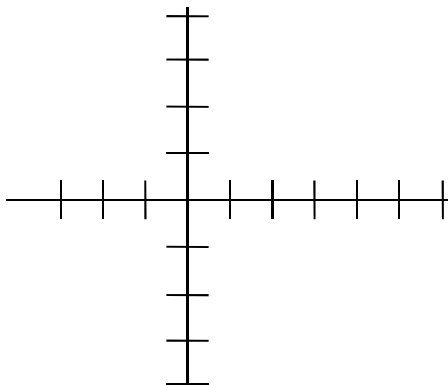
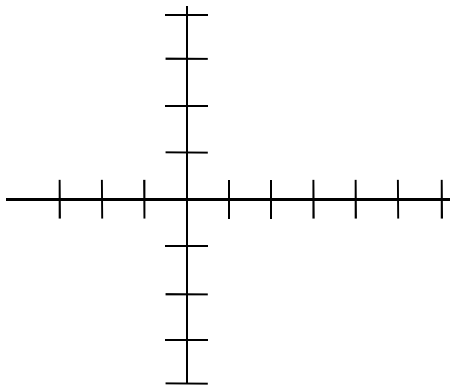
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



**11.**  $y = 3 \sin(x + \pi) - 2$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**12.**  $y = \frac{1}{4} \cos x$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**13.**  $y = \frac{-2}{5} \cos x$

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

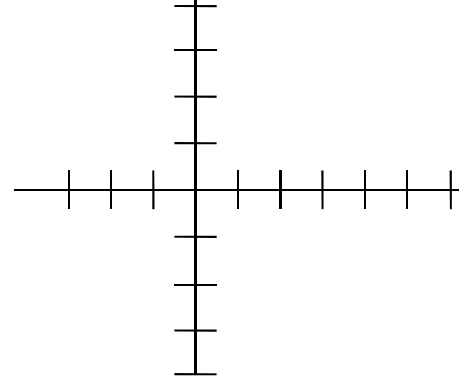
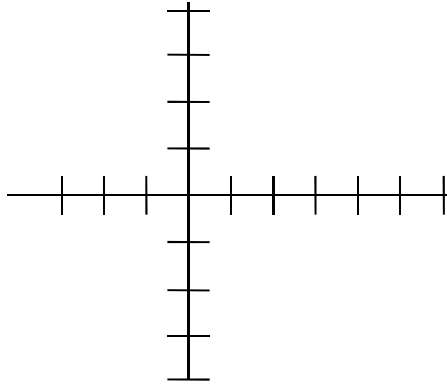
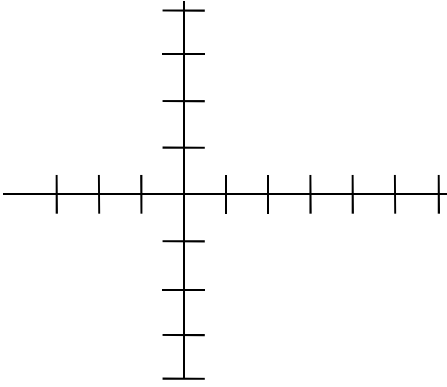
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



**14.**  $y = 3 \cos \pi x$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**15.**  $y = \cos x - 5$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

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

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

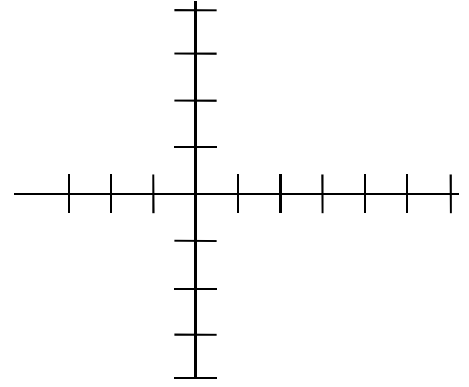
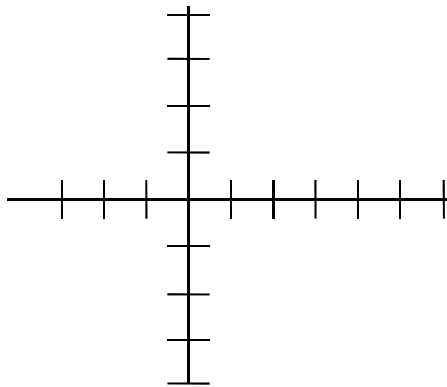
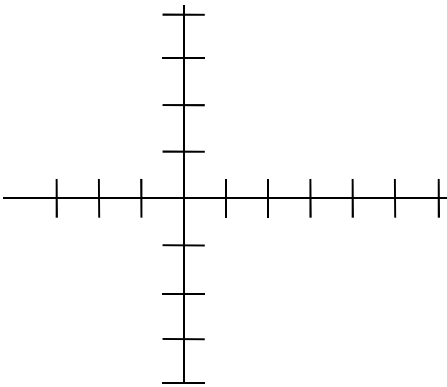
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



**17.**  $y = 3 \cos 2x - 1$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**18.**  $y = -\cos \pi x - 2$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**19.**  $y = -\cos(x - \pi) - 1$

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

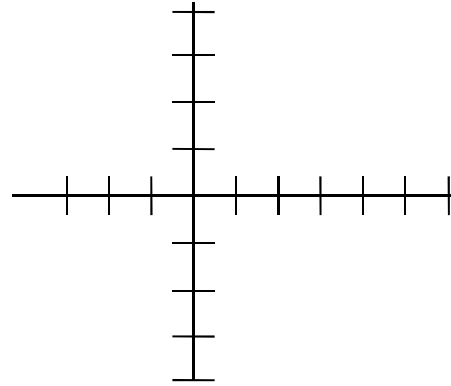
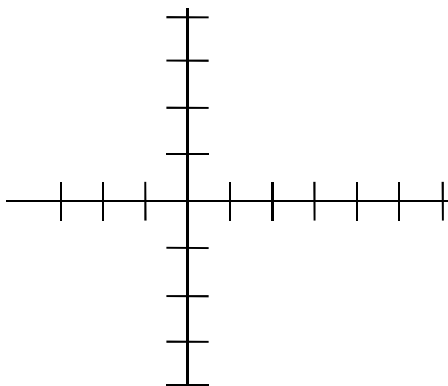
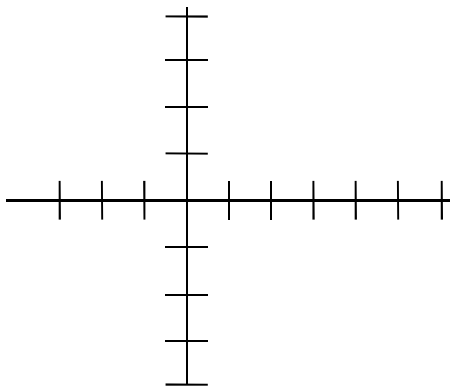
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



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

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**21.**  $y = -2 \cos 2(x - \pi) + 1$

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

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

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:

**22.**  $y = \cos(x + 2\pi) + 3$

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

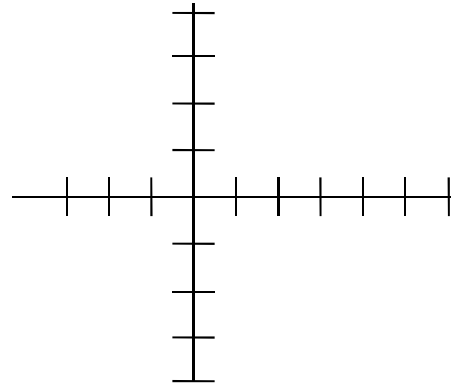
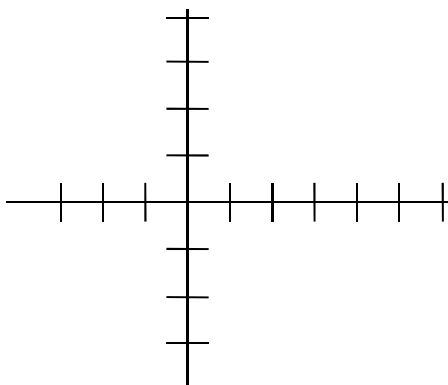
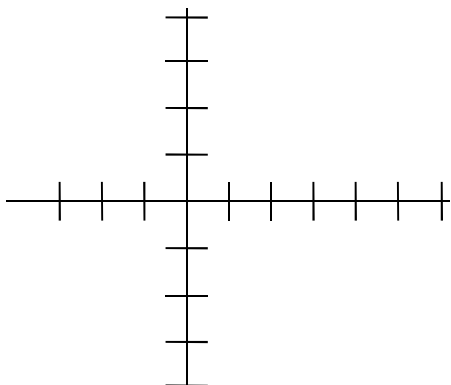
Amplitude: \_\_\_\_\_

Reflection: \_\_\_\_\_

Phase Shift: \_\_\_\_\_

Vertical Shift: \_\_\_\_\_

Transformations:



Directions: Match the graph with its equation by writing the appropriate letter next to the equation.

23.  $y = 4 \sin 4x$  \_\_\_\_\_

24.  $y = \cos(x + \pi)$  \_\_\_\_\_

25.  $y = 4 \cos 4x$  \_\_\_\_\_

26.  $y = 4 \sin \frac{1}{4}x$  \_\_\_\_\_

27.  $y = \sin 2\left(x + \frac{\pi}{2}\right)$  \_\_\_\_\_

28.  $y = \cos x - 2$  \_\_\_\_\_

29.  $y = \cos \frac{1}{2}x + 1$  \_\_\_\_\_

