

13.4 Sine and Cosine Graphs Worksheet

Name Key
 Date _____ Hour _____

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.

normal

- 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: 2π

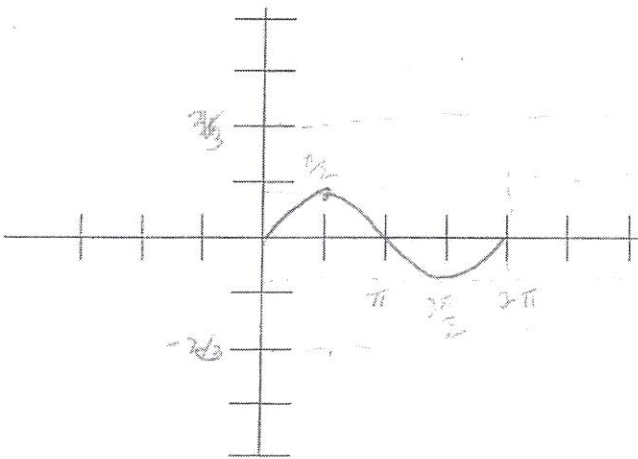
Amplitude: $\frac{2}{3}$

Reflection: None

Phase Shift: None

Vertical Shift: None

Transformations:



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

Period: 2

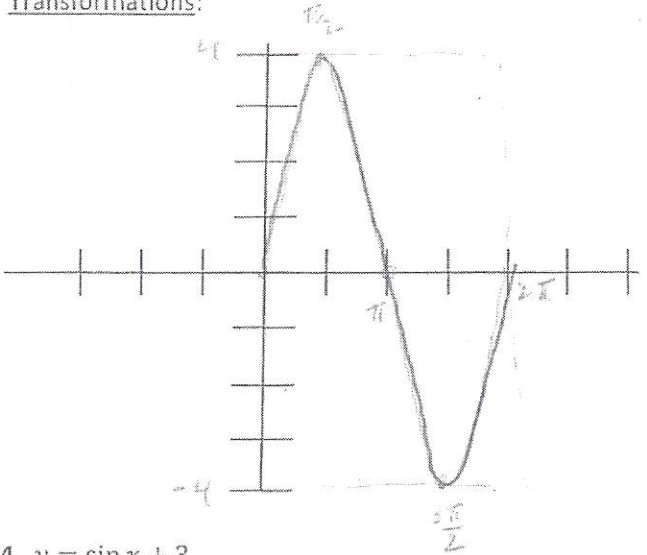
Amplitude: 4

Reflection: None

Phase Shift: None

Vertical Shift: None

Transformations:



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

Period: 4π

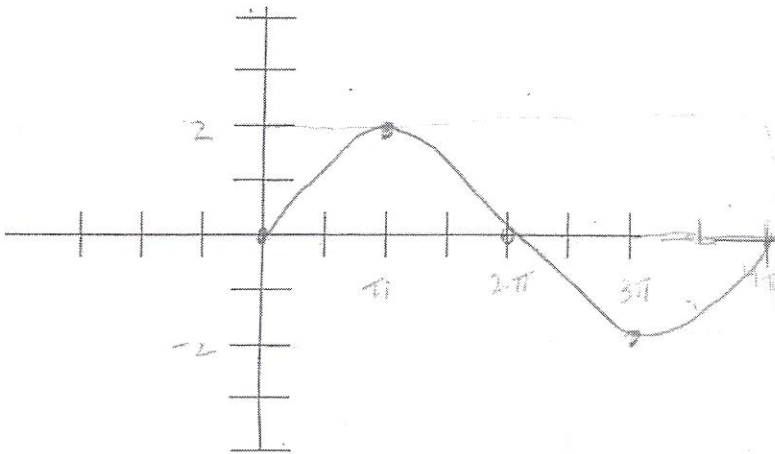
Amplitude: 2

Reflection: None

Phase Shift: None

Vertical Shift: None

Transformations:



4. $y = \sin x + 3$

Period: 2π

Amplitude: 1

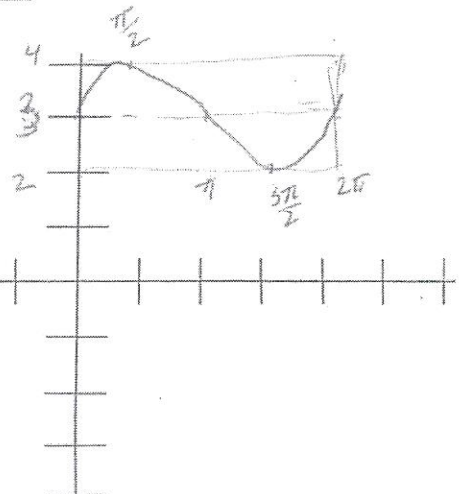
Reflection: None

Phase Shift: None

Vertical Shift: 3

Transformations:

midline y = 3



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

Period: 4π

Amplitude: 1

Reflection: ~~X AXIS~~

Phase Shift: ~~$\frac{\pi}{4}$~~

Vertical Shift: -4

Transformations:

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

Period: 2π

Amplitude: 1

Reflection: ~~X AXIS~~

Phase Shift: ~~$\frac{\pi}{4}$~~ $\frac{\pi}{4}$

Vertical Shift: ~~$\frac{\pi}{4}$~~

Transformations:

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

Period: 4π

Amplitude: 1

Reflection: ~~X AXIS~~ yes

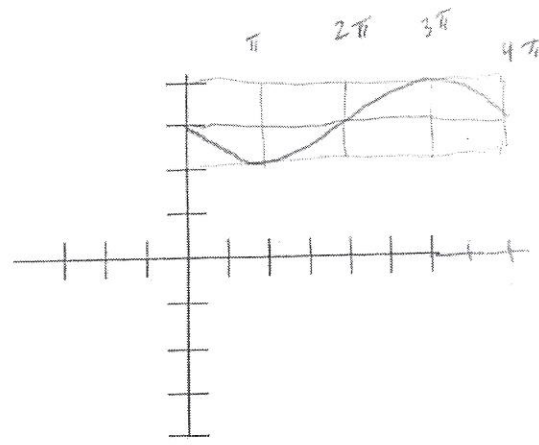
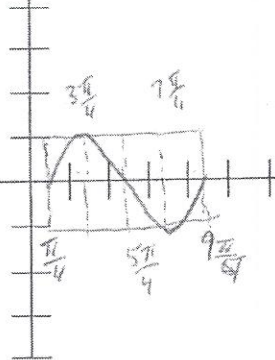
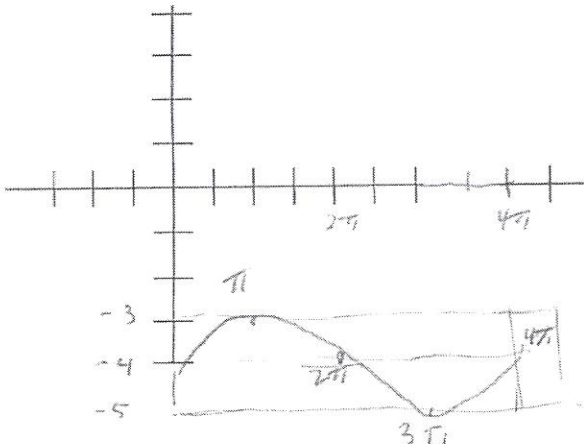
Phase Shift: ~~$\frac{\pi}{4}$~~

Vertical Shift: +3

Transformations:

NOT TO SCALE

midline $y = 3$



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

Period: 2π

Amplitude: 2

Reflection: ~~X AXIS~~ yes

Phase Shift: π

Vertical Shift: ~~π~~

Transformations:

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

Period: 2π

Amplitude: 4

Reflection: ~~X AXIS~~

Phase Shift: $\frac{3\pi}{2}$

Vertical Shift: ~~$\frac{3\pi}{2}$~~

Transformations:

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

Period: 2π

Amplitude: 1

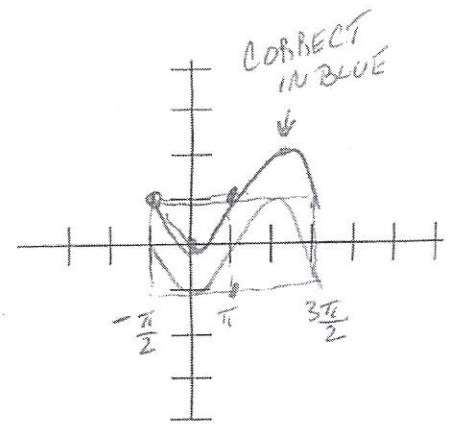
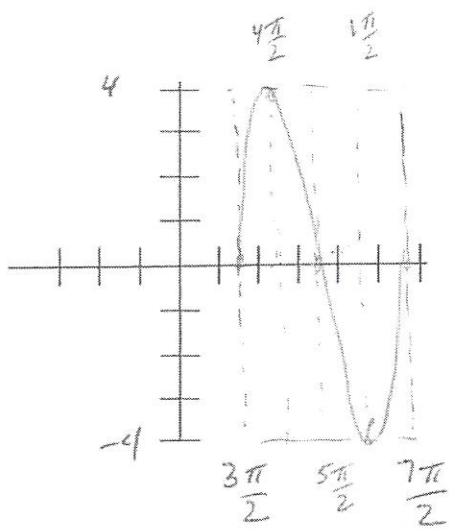
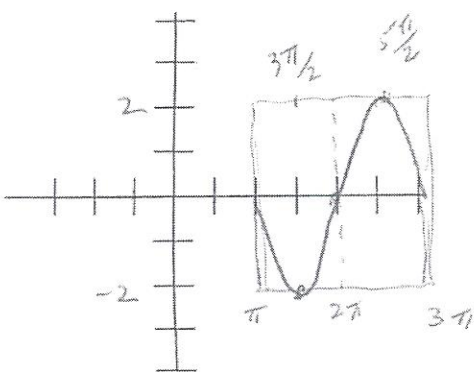
Reflection: ~~X AXIS~~ yes

Phase Shift: $-\frac{\pi}{2}$

Vertical Shift: 1

Transformations:

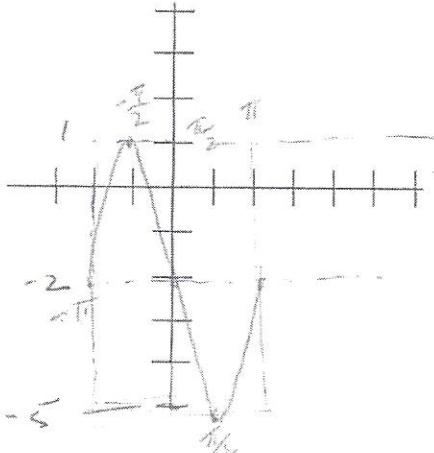
midline $y = 1$



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

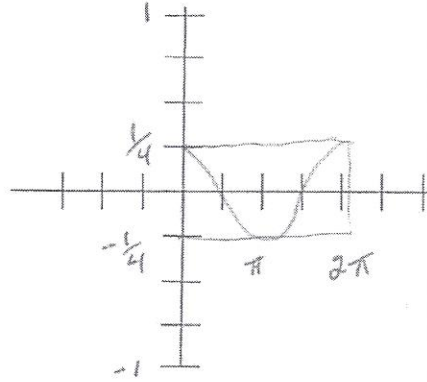
Period: 2π
 Amplitude: 3
 Reflection: ~~yes~~
 Phase Shift: $-\pi$
 Vertical Shift: -2
 Transformations:

midline $y = -2$



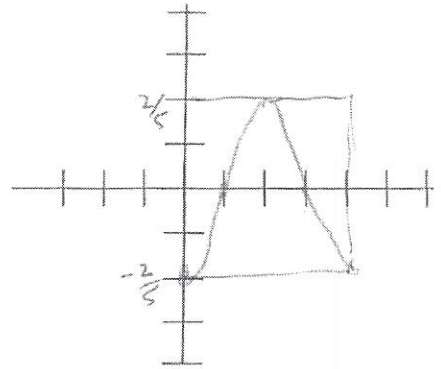
12. $y = \frac{1}{4} \cos x$

Period: 2π
 Amplitude: $\frac{1}{4}$
 Reflection: ~~yes~~
 Phase Shift: 0
 Vertical Shift: 0
 Transformations:



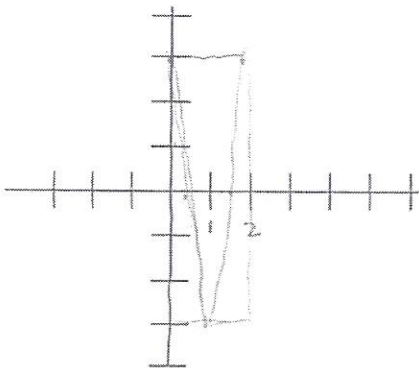
13. $y = \frac{-2}{5} \cos x$

Period: 2π
 Amplitude: $\frac{2}{5}$
 Reflection: yes
 Phase Shift: 0
 Vertical Shift: 0
 Transformations:



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

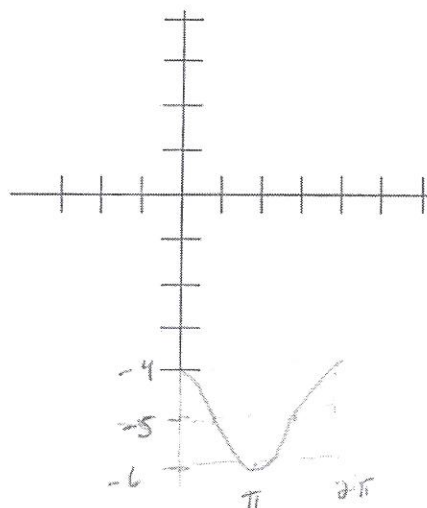
Period: 2
 Amplitude: 3
 Reflection: ~~yes~~
 Phase Shift: 0
 Vertical Shift: 0
 Transformations:



15. $y = \cos x - 5$

Period: 2π
 Amplitude: 1
 Reflection: ~~yes~~
 Phase Shift: 0
 Vertical Shift: -5
 Transformations:

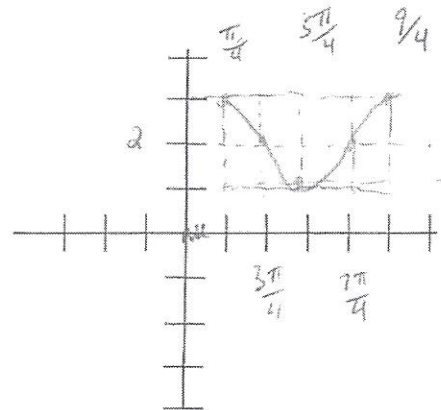
midline $y = -5$



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

Period: 2π
 Amplitude: 1
 Reflection: ~~yes~~
 Phase Shift: $\pi/4$
 Vertical Shift: 2
 Transformations:

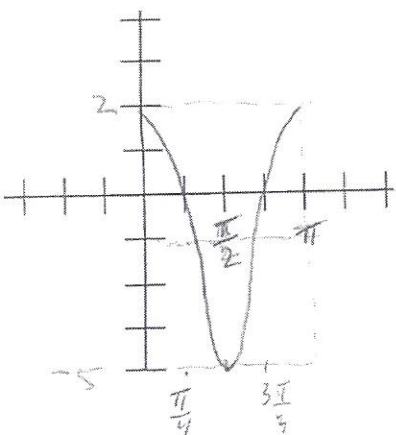
midline $y = 2$



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

Period: π
 Amplitude: 3
 Reflection: ~~Y AXIS~~
 Phase Shift: $\frac{\pi}{2}$
 Vertical Shift: -1
 Transformations:

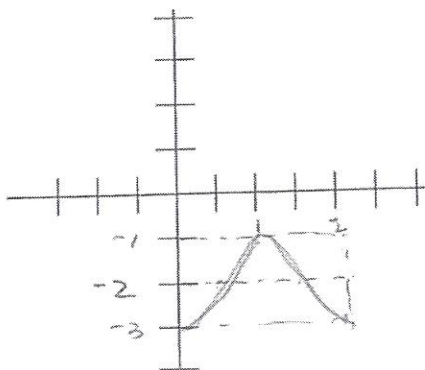
midline $y = -1$



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

Period: 2
 Amplitude: 1
 Reflection: ~~Y AXIS~~ yes
 Phase Shift: $\frac{\pi}{2}$
 Vertical Shift: -2
 Transformations:

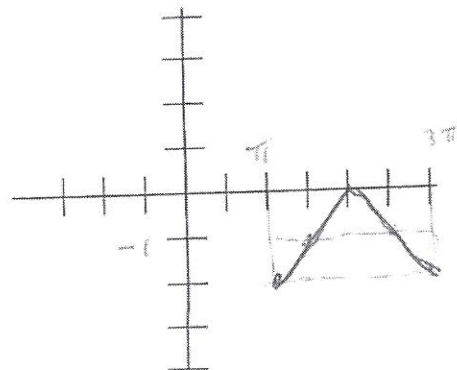
midline $y = -2$



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

Period: 2π
 Amplitude: 1
 Reflection: ~~Y AXIS~~ yes
 Phase Shift: π
 Vertical Shift: -1
 Transformations:

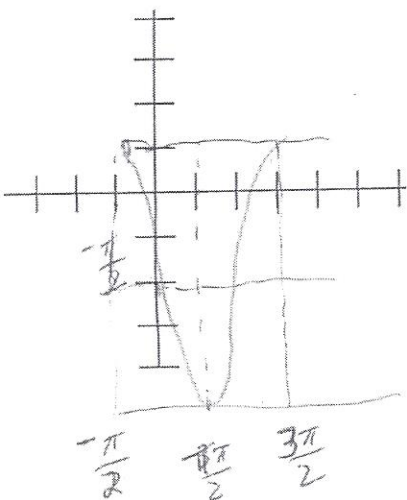
midline $y = -1$



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

Period: 2π
 Amplitude: 3
 Reflection: ~~Y AXIS~~
 Phase Shift: $-\frac{\pi}{2}$
 Vertical Shift: -2
 Transformations:

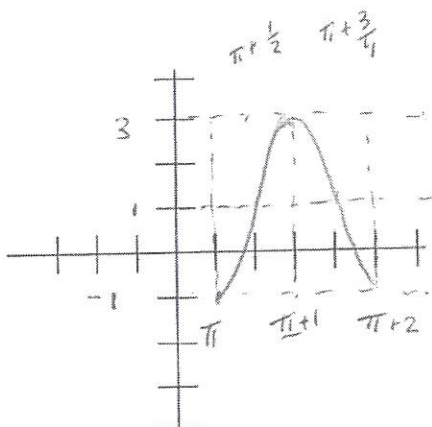
midline $y = -2$



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

Period: π
 Amplitude: -2
 Reflection: ~~X AXIS~~ yes
 Phase Shift: π
 Vertical Shift: 1
 Transformations:

midline $y = 1$



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

Period: 2π
 Amplitude: 1
 Reflection: ~~X AXIS~~ yes
 Phase Shift: -2π
 Vertical Shift: 3
 Transformations:

midline $y = 3$

