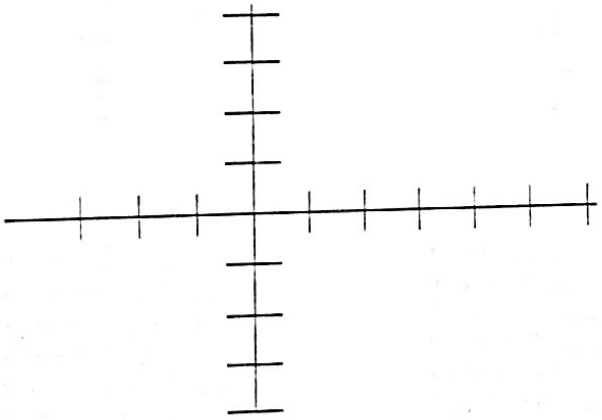
Honors Algebra 2
13.4 Sine and Cosine Graphs Worksheet EVENS

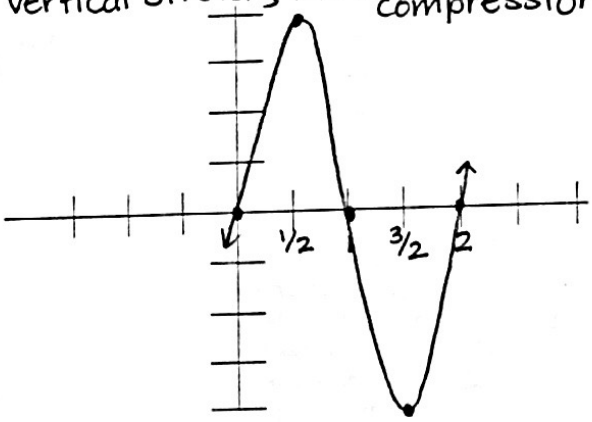
Name _____
Date _____ Hour _____

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.
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.

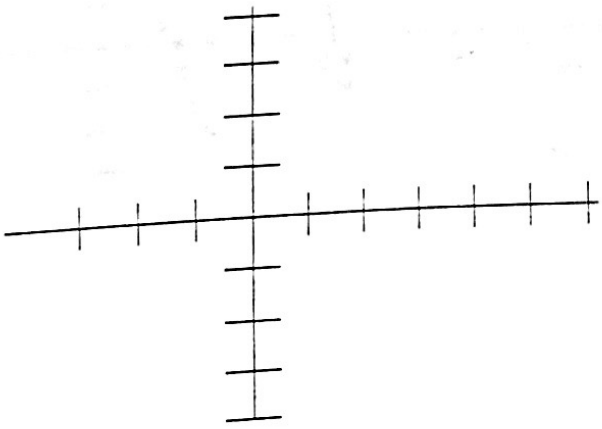
1. $y = \frac{2}{3}\sin(x)$
Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



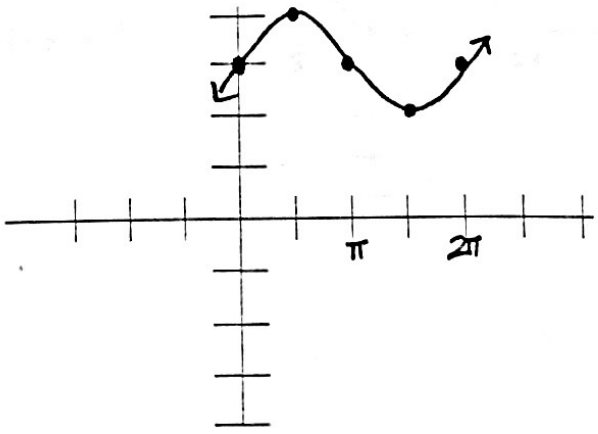
2. $y = 4\sin(\pi x)$
Period: 2
Amplitude: 4
Reflection: none
Phase Shift: none
Vertical Shift: none
Transformations:
vertical stretch; horizontal compression



3. $y = 2\sin\frac{1}{2}x$
Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:

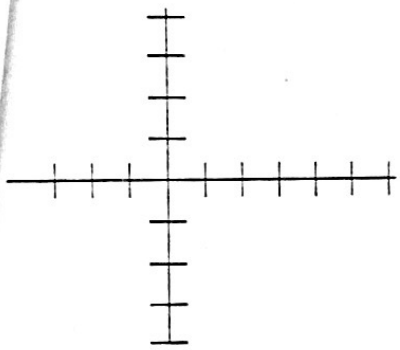


4. $y = \sin(x) + 3$
Period: 2π
Amplitude: 1
Reflection: none
Phase Shift: none
Vertical Shift: up 3
Transformations:
vertical translation up 3 units



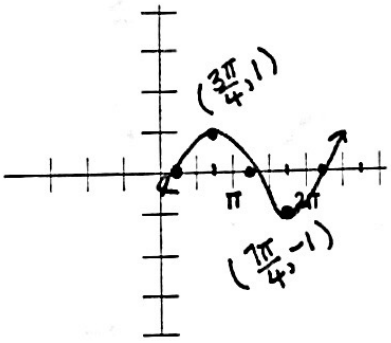
5. $y = \sin(\frac{1}{2}x) - 4$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



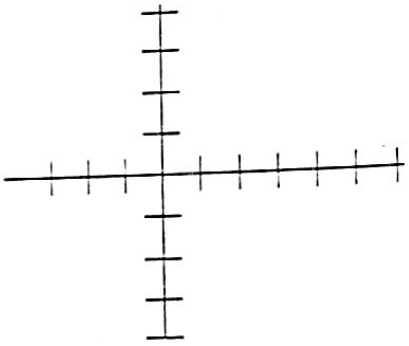
6. $y = \sin\left(x - \frac{\pi}{4}\right)$

Period: 2π
Amplitude: 1
Reflection: None
Phase Shift: right π/4
Vertical Shift: none
Transformations:
horizontal translation right π/4 units



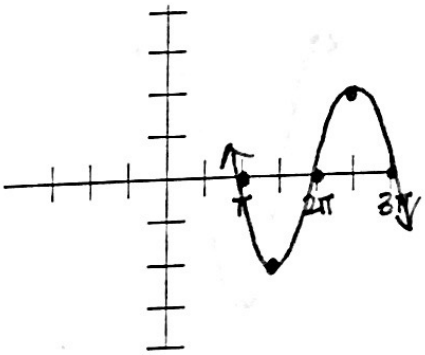
7. $y = -\sin\frac{1}{2}x + 3$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



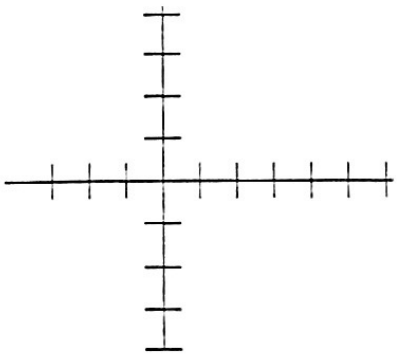
8. $y = -2\sin(x - \pi)$

Period: 2π
Amplitude: 2
Reflection: over x-axis
Phase Shift: Right π
Vertical Shift: None
Transformations:
Reflect over x-axis vertical stretch; vert horizontal translation right π units



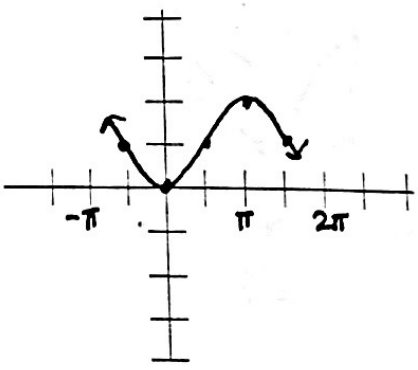
9. $y = 4\sin\left(x - \frac{3\pi}{2}\right)$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



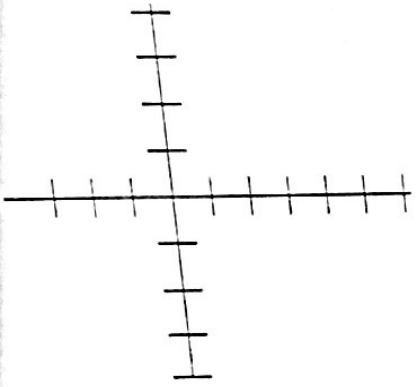
10. $y = -\sin\left(x + \frac{\pi}{2}\right) + 1$

Period: 2π
Amplitude: 1
Reflection: over y=1
Phase Shift: left π/2
Vertical Shift: up 1
Transformations:
Reflection; horizontal shift left π/2 units, Vertical shift up 1 unit.



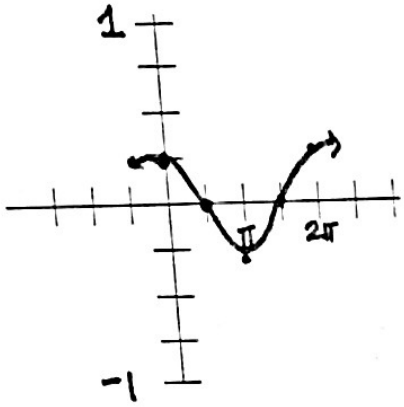
11. $y = 3\sin(x+\pi) - 2$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



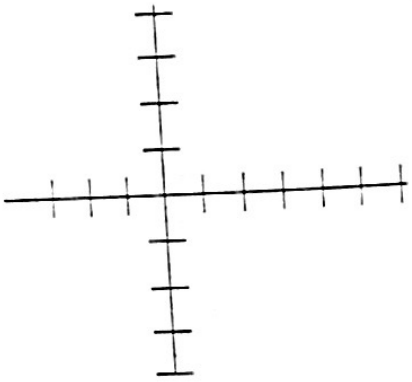
12. $y = \frac{1}{4}\cos x$

Period: 2π
Amplitude: 1/4
Reflection: None
Phase Shift: None
Vertical Shift: None
Transformations:
Vertical shrink



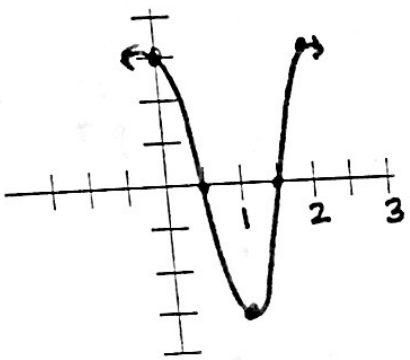
13. $y = \frac{-2}{5}\cos x$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



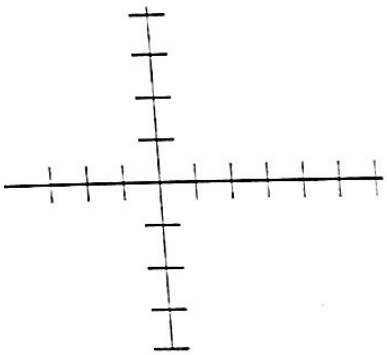
14. $y = 3\cos \pi x$

Period: 2
Amplitude: 3
Reflection: None
Phase Shift: None
Vertical Shift: None
Transformations:
Vertical stretch by a factor of 2. Horizontal compression.



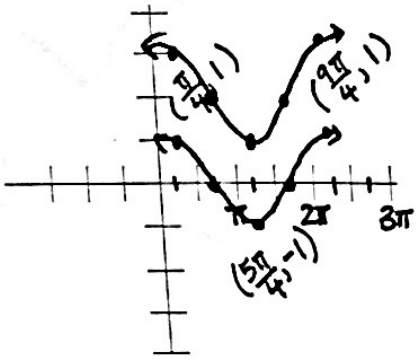
15. $y = \cos x - 5$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



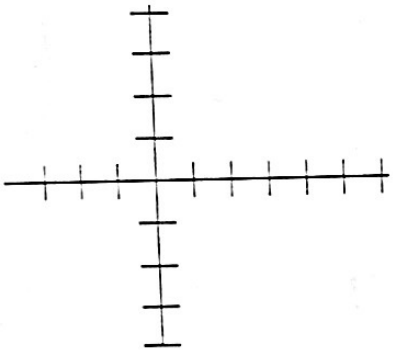
16. $y = \cos\left(x - \frac{\pi}{4}\right) + 2$

Period: 2π
Amplitude: 1
Reflection: None
Phase Shift: Right π/4
Vertical Shift: up 2
Transformations:
Vertical shift up 2, Horizontal shift right π/4



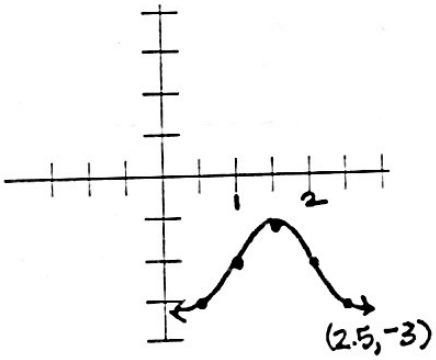
17. $y = 3\cos 2x - 1$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



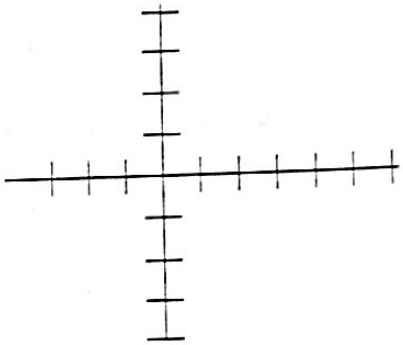
18. $y = -\cos \pi x - 2$

Period: 2
Amplitude: 1
Reflection: over $y=-2$
Phase Shift: None
Vertical Shift: down 2
Transformations:
Reflection
horizontal compression
vertical shift down 2



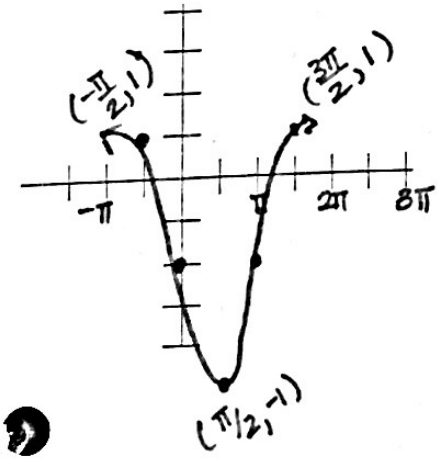
19. $y = -\cos(x - \pi) - 1$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



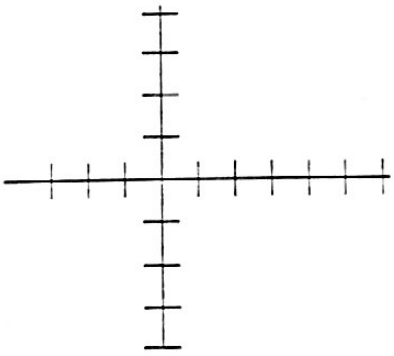
20. $y = 3\cos\left(x + \frac{\pi}{2}\right) - 2$

Period: 2π
Amplitude: 3
Reflection: None
Phase Shift: left $\pi/2$
Vertical Shift: Down 2
Transformations:
vertical stretch, horizontal shift left $\pi/2$, vertical shift down 2 units



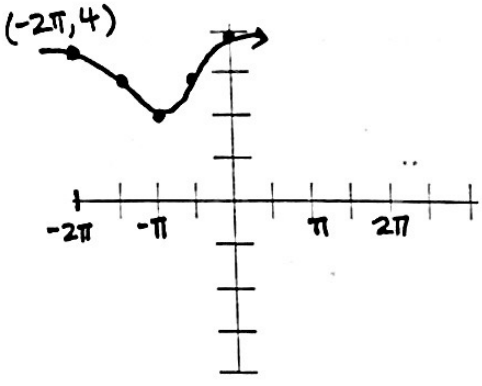
21. $y = -2\cos 2(x - \pi) + 1$

Period: _____
Amplitude: _____
Reflection: _____
Phase Shift: _____
Vertical Shift: _____
Transformations:



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

Period: 2π
Amplitude: 1
Reflection: none
Phase Shift: left 2π
Vertical Shift: up 3
Transformations:
horizontal shift left 2π units, vertical shift up 3



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

A

D

C

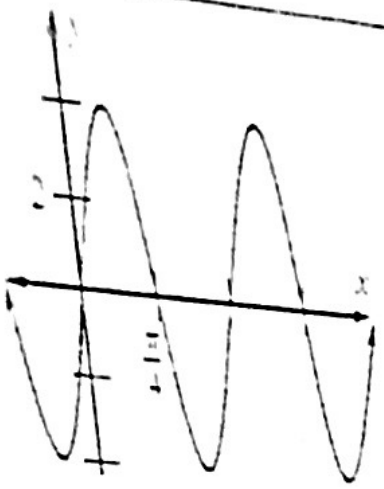
B

F

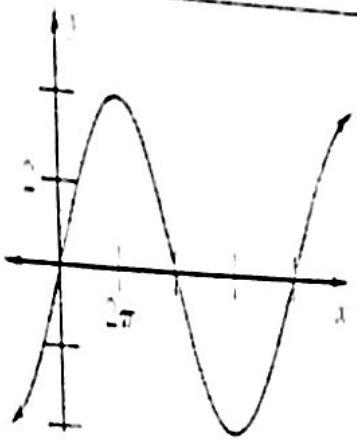
G

E

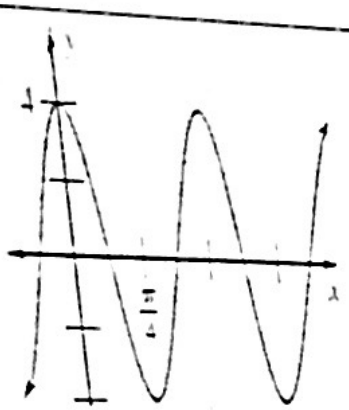
A.



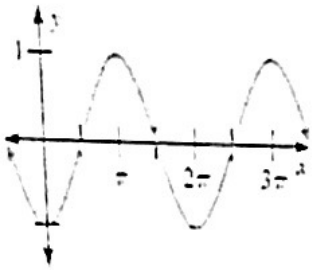
B.



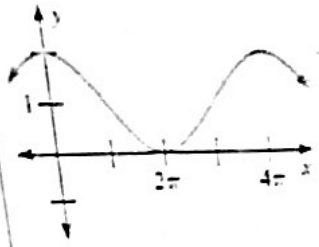
C.



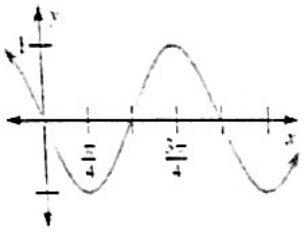
D.



E.



F.



G.