Trigonometry Chapter 4

Section 1

I. Vocabulary

Complete each statement:

1. The AMPLITUDE of the graph of the function $f(x)=\sin(x)$ is _____.
2. The STANDARD INTERVAL of the graph of the function $f(x)=\cos(x)$ is _____.
3. The PERIOD of the graph of the function $f(x)=\sin(x)$ is _____.
4. The RANGE of the graph of the function $f(x)=\cos(x)$ is _____.
5. The DOMAIN of the graph of the function $f(x)=\sin(x)$ is _____.
6. The GRAPH of the function $f(x)=\sin(x)$ is

7. The GRAPH of the function $f(x)=\cos(x)$ is

8. The GRAPH of the function $f(x)=-\sin(x)$ is

9. The GRAPH of the function $f(x)=-\cos(x)$ is

II. The BASIC QUADRANTAL EQUATIONS (solve in the interval $[0,2\pi)$) are:

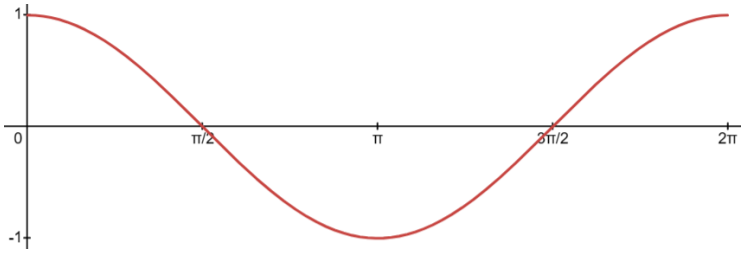
10. $\sin(x)=0 \Rightarrow x=\_\_\_, x=\_\_\_$
11. $\sin(x)=1 \Rightarrow x=\_\_\_$
12. $\sin(x)=-1 \Rightarrow x=\_\_\_$
13. $\cos(x)=0 \Rightarrow x=\_\_\_, x=\_\_\_$
14. $\cos(x)=1 \Rightarrow x=\_\_\_$
15. $\cos(x)=-1 \Rightarrow x=\_\_\_$

III. Match each function with its one-period graph. Note that not all graphs will be used.

16. _____ $f(x) = -\sin(x)$ 17. _____ $f(x) = 2\cos(x)$ 18. _____ $f(x) = \sin(\frac{1}{2}x)$

19. _____ $f(x) = \cos(2x)$ 20. _____ $f(x) = 2\sin(x)$ 21. _____ $f(x) = -\cos(x)$

A.



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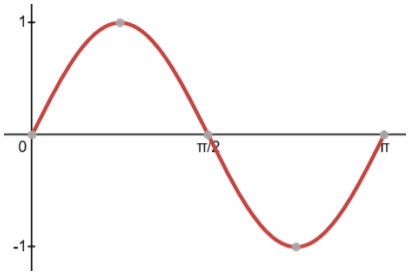

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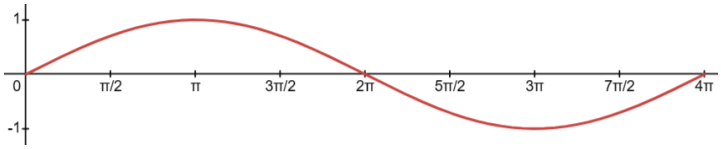

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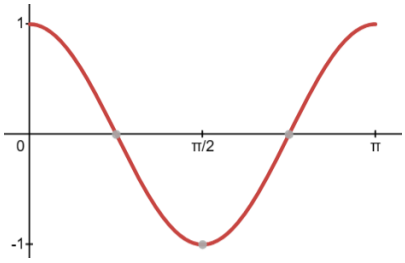

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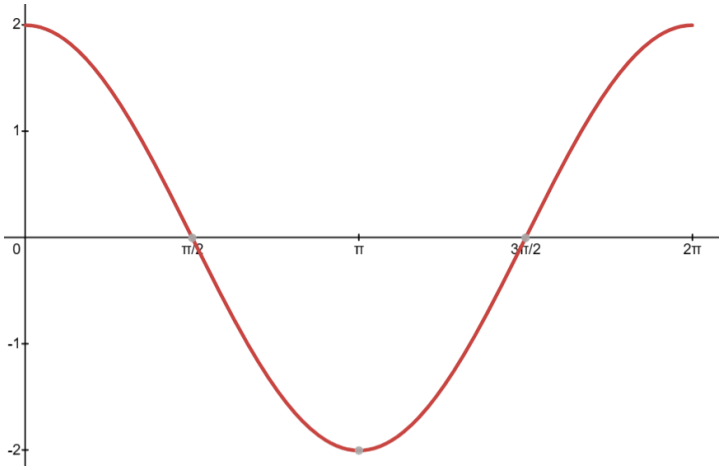

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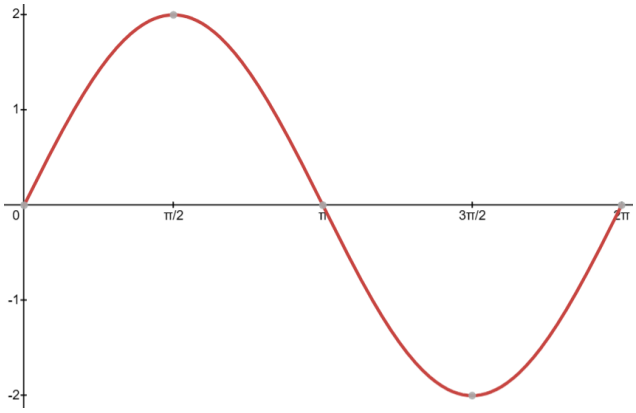

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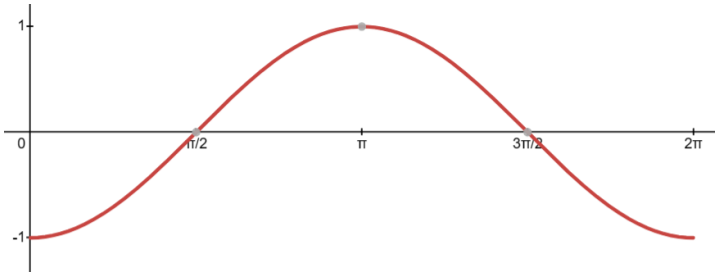

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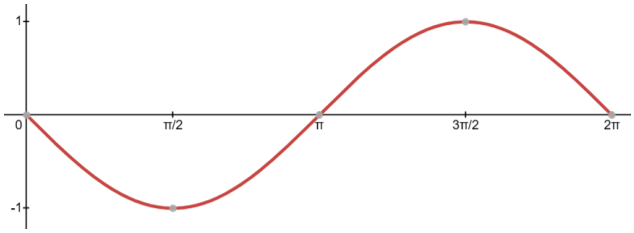


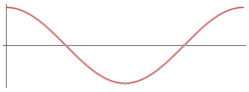
III. Graph the standard period of each function, as demonstrated in class.

Example:

a) $f(x) = -\cos(\frac{1}{2}x)$ b) $f(x) = 3\sin(x)$ c) $f(x) = -2\sin(2x)$

Solution:

a) $f(x) = -\cos(\frac{1}{2}x)$

Basic shape: 

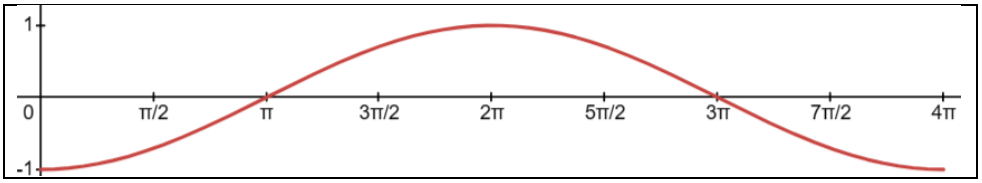
Amplitude: $|-1| = 1$

Standard Interval: $0 \le \frac{1}{2}x < 2\pi$

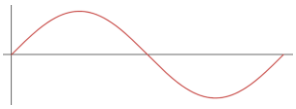
$\Rightarrow 2 \cdot \left(0 \le \frac{1}{2}x < 2\pi\right)$

$\Rightarrow 0 \le x < 4\pi$

So we have:



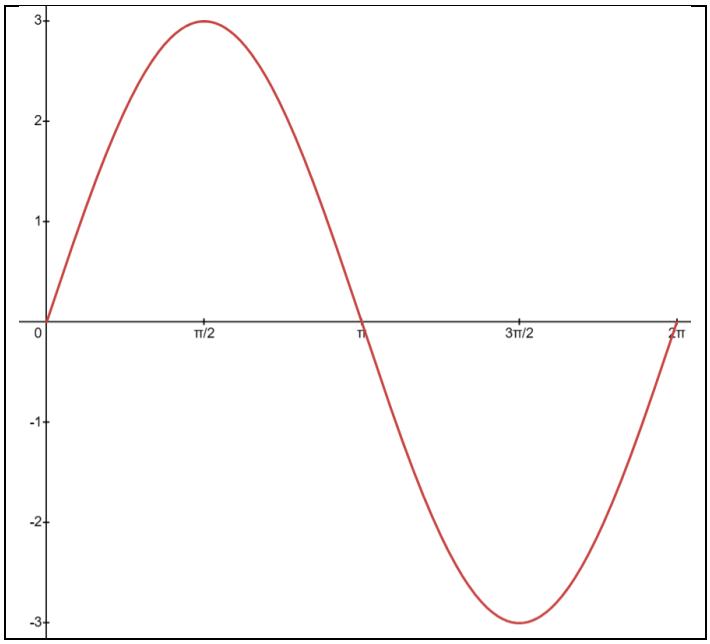
b) $f(x) = 3\sin(x)$

Basic shape: 

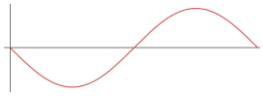
Amplitude: $|3| = 3$

Standard Interval: $0 \le x < 2\pi$

So we have:



c) $f(x) = -2\sin(2x)$

Basic shape: 

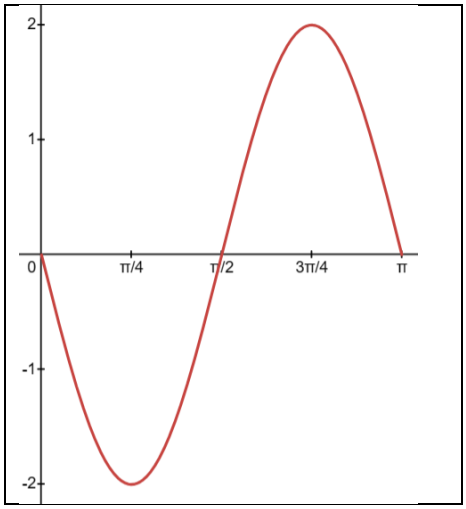
Amplitude: $|-2| = 2$

Standard Interval: $0 \le 2x < 2\pi$

$\Rightarrow \frac{1}{2} \cdot (0 \le 2x < 2\pi)$

$\Rightarrow 0 \le x < \pi$

So we have:



22. $f(x) = -\sin(2x)$

23. $f(x) = 3\sin(x)$

24. $f(x) = 2\cos(2x)$

25. $f(x) = -\frac{1}{2}\cos(2x)$

26. $f(x) = 3\sin(4x)$

27. $f(x) = \frac{1}{2}\sin(\frac{1}{2}x)$

28. $f(x) = -5\cos(x)$

29. $f(x) = \cos(2x)$

30. $f(x) = -2\sin(x)$