Name:_____ Date:_____

**M12P HW Section 5.3 Graphing Sine and Cosine Function With Change in Period**

$y = AsinB(x - C) + D$ , $y = AcosB(x - C) + D$, $\frac{2\pi}{B} = p$ , and $\frac{2\pi}{p} = B$

1. How does the constant "B" transform the trigonometric functions above? Explain:

2. Suppose $B = \frac{2}{3}$, what is the period of $y = 5sin\frac{2}{3}(x - 2) + 7$? Explain:

3. Suppose $B = \frac{2\pi}{3}$, what is the period of $y = 5sin\frac{2\pi}{3}(x - 2) + 7$? Explain:

4. How many "x" intercepts between 0 and $2\pi$ does the equation $y = 5sin(x - 2)$ have? Suppose B=3, then how many "x" intercepts between 0 and 2π does the equation $y = 5sin3(x - 2)$ have?

5. If we want the period of the function $y = 5sinB(x - 2) + 7$ to be 7, then what should the value of "B" be?

6. What is an "ODD" function? What is an "Even" function? How is it helpful for graphing sine and cosine functions that have horizontal reflections?

7. When graphing a sine function with a horizontal reflection, what transformation can we make to simplify the equation? Explain: Ie: $y = 2\sin\left(-\pi\left(\theta - 3\right)\right) + 1$

8. When graphing a cosine function with a horizontal reflection, what transformation can we make to simplify the equation? Explain: Ie: $y = 5\cos\left(-\pi\left(\theta - 7\right)\right) + 1$

9. For each of the following equations, find the constants “A” , “B”, “C” and “D”. Then indicate the transformations involved. State the period, amplitude, domain, and range: Graph the function. Label the coordinates of all the Max and Min points on your graph.

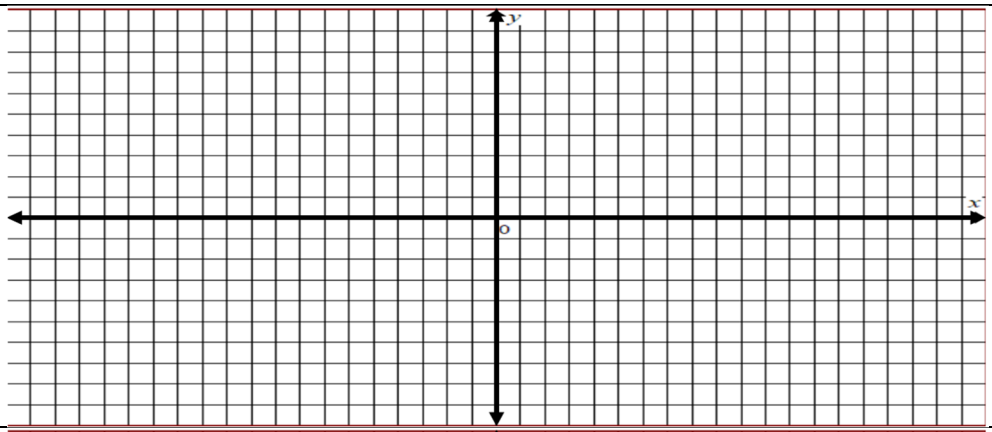
$y = 3\sin\frac{2\pi}{3}(\theta - 2) + 1$

A: B

C: D:

Amplitude Period :

Domain : Range :



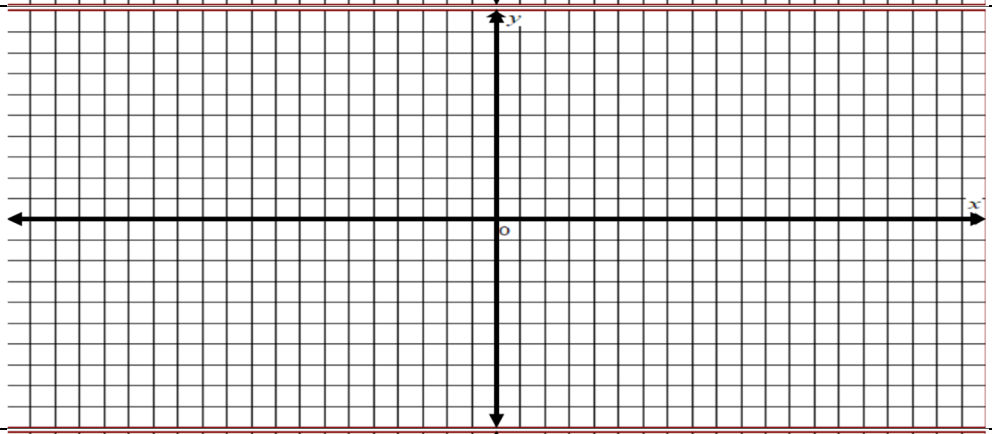

$y = 3\cos\frac{2\pi}{5}(\theta - 3) + 2$

A: B

C: D:

Amplitude Period :

Domain : Range :



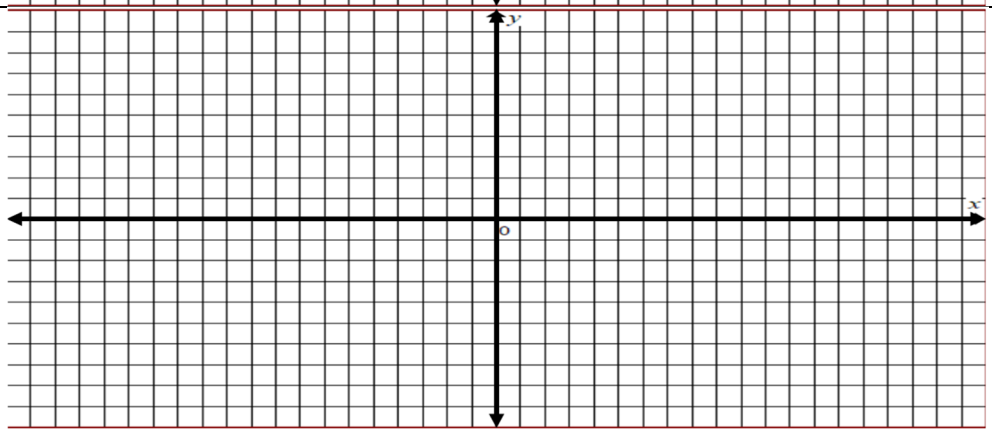

$y = 5\sin\frac{-\pi}{3}(\theta + 4) - 1$

A: B

C: D:

Amplitude Period :

Domain : Range :



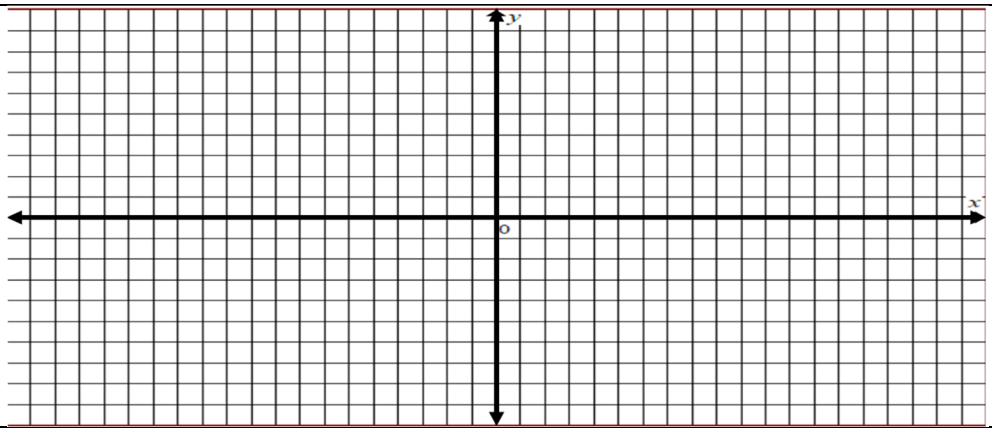

$y = -3\cos\frac{-2\pi}{5}(\theta - 3) + 2$

A: B

C: D:

Amplitude Period :

Domain : Range :



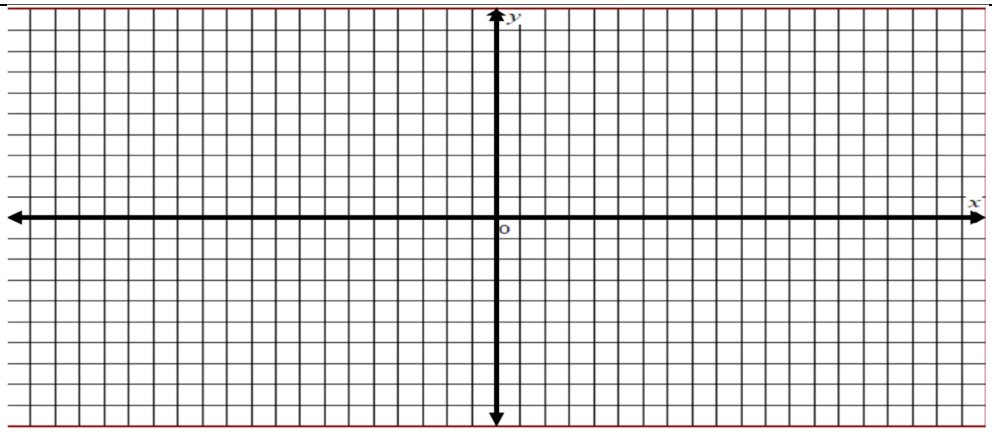
$y = 3\sin(2\theta) + 1$

A: B

C: D:

Amplitude Period :

Domain : Range :



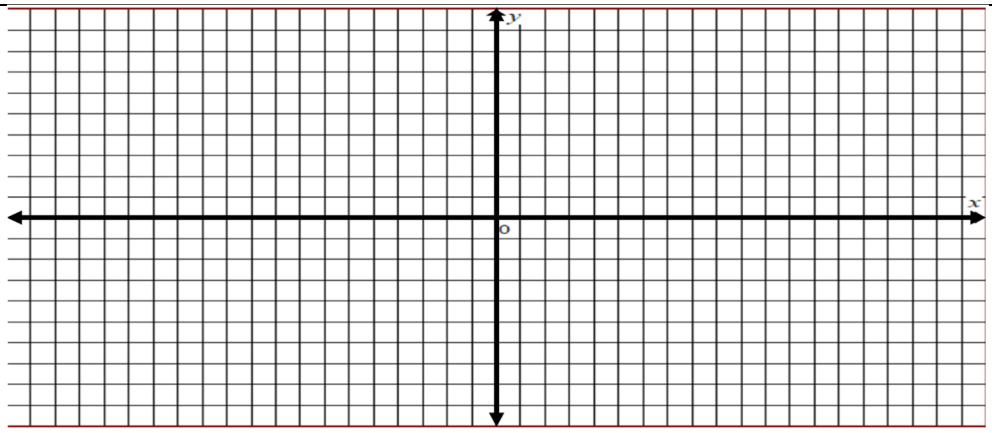

$y = 4\cos\left(\frac{\theta}{2}\right) + 2$

A: B

C: D:

Amplitude Period :

Domain : Range :



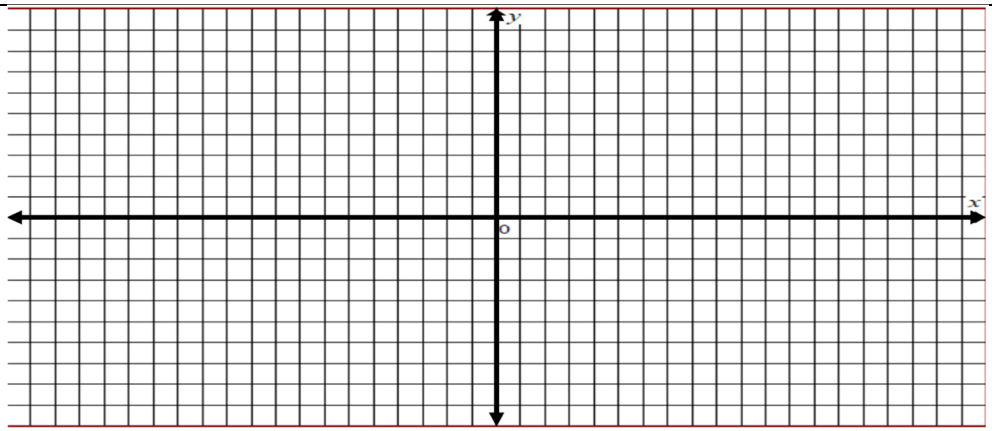

$y = 3.5\sin\left(\pi - \frac{2\theta}{3}\right) + 2$

A: B

C: D:

Amplitude Period :

Domain : Range :



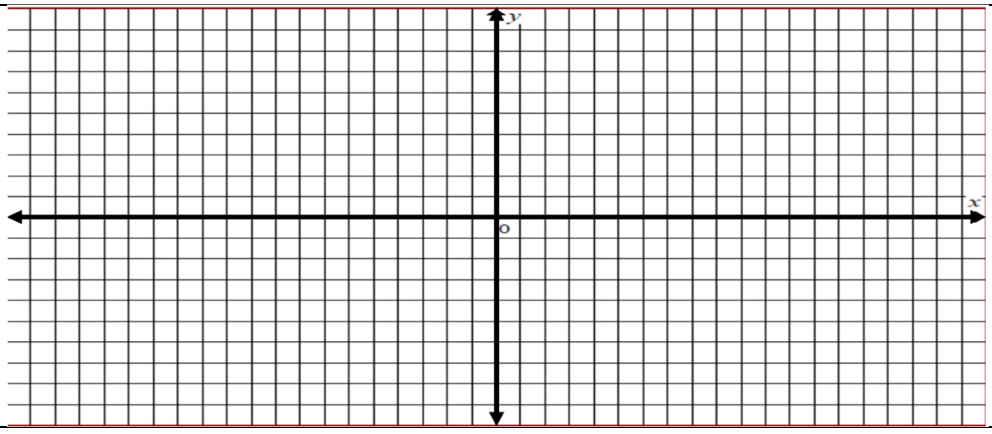

$y = 4.5\cos\left(\frac{3\pi}{2} - 3\theta\right) - 1$

A: B

C: D:

Amplitude Period :

Domain : Range :



10. Indicate the Period and the number of cycles between 0 and 2pi. Find all the "x" intercepts for $0 \le \theta \le 2\pi$. Show all your work and steps:

i) $y = 3\sin 2\theta + 1$

ii) $y = 6\cos 2\left(\theta + \frac{\pi}{2}\right) + 3$

iii) $y = 2\sin 3\left(\theta + \frac{\pi}{7}\right) + \sqrt{3}$

iv) $y = -15\sin 4\left(\theta + \frac{2\pi}{5}\right) + 8$

11. Which two of the functions below are the same function?

$i) y = 3\sin 2\left(\theta + \frac{\pi}{2}\right)$ $ii) y = 3\cos 2\theta$ $iii) y = 3\cos 2\left(\theta + \frac{\pi}{4}\right)$ $iv) y = 3\sin 2\left(\theta + \pi\right)$

12. Which two of the functions below are the same function?

$i) y = 3\sin 2\left(2\theta + \pi\right)$ $ii) y = 3\cos\left(2\theta + \frac{\pi}{2}\right)$ $iii) y = 3\cos 2\theta$ $iv) y = 3\sin 2\left(2\theta + 2\pi\right)$