Name:_____ Date:_____

M12P HW Section 5.2 Graphing Sine and Cosine Function With Transformations

$$y = Asin(x - C) + D \quad and \quad y = Acos(x - C) + D$$

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

2. How does the constant "C" transform the trigonometric functions above? Explain:

3. How does the constant "D" transform the trigonometric functions above? Explain:

4. What is the range of a sine or cosine function in terms of "A" , "C", and "D"? Explain:

5. What is the value of "B" in the function $y = AsinB(x - C) + D$ for y= $4sin(x - 2) + 3$? How does the constant "B" transform the sine function? Explain:

6. Does the function $y = 3sin(x - 4) + 5$ have any X-intercepts? Explain:

7. How would you tell if a sine or cosine function has any X-intercepts by looking at their equations? Explain:

8. What are the x-intercepts of the function: $y = 3sin\left(x - \frac{\pi}{3}\right) + 2$. Provide a general formula for all the X-intercepts.

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9. For each of the following equations, find the constants “A” , “C” and “D”. Then indicate the transformations involved. State the period, amplitude, domain, and range: Graph the function.

$y = 3\sin\left(\theta - \frac{\pi}{4}\right) + 0.5$

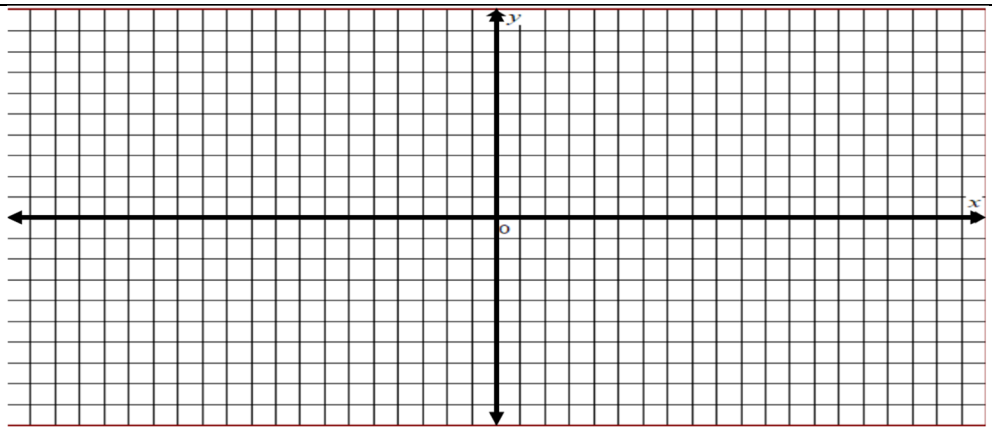
A: Amplitude

C:

D:

Period :

Domain : Range :



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

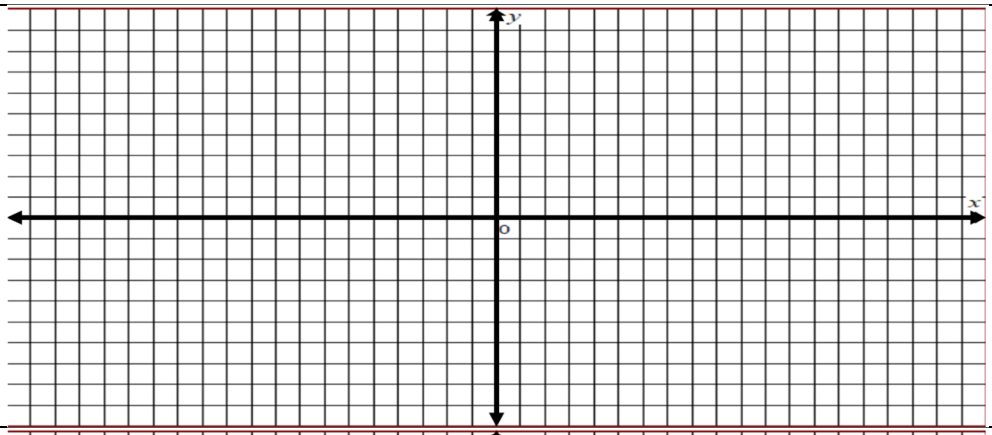
A: Amplitude

C:

D:

Period :

Domain : Range :



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

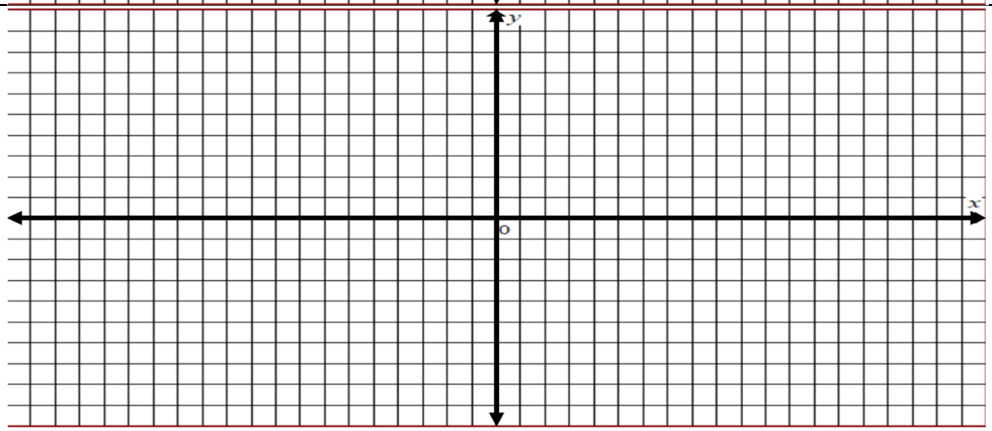
A: Amplitude

C:

D:

Period :

Domain : Range :



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

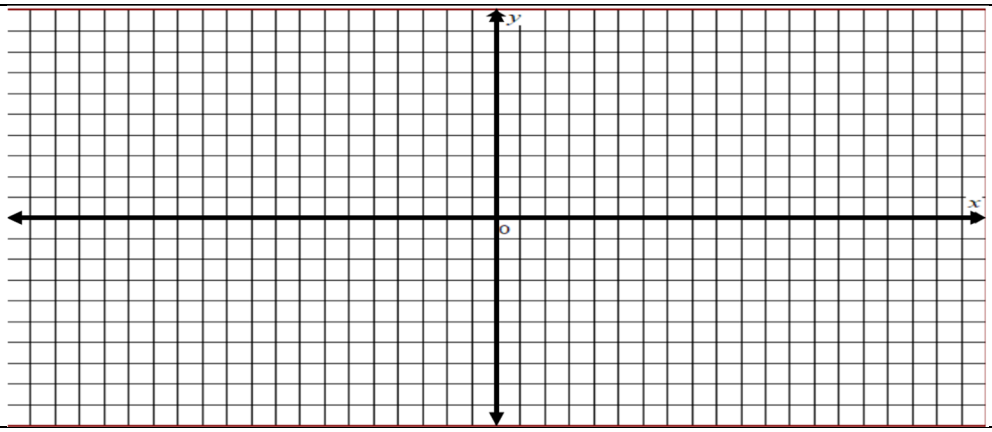
A: Amplitude

C:

D:

Period :

Domain : Range :



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$y = 8\sin\left(\theta - \frac{\pi}{6}\right) + 4$

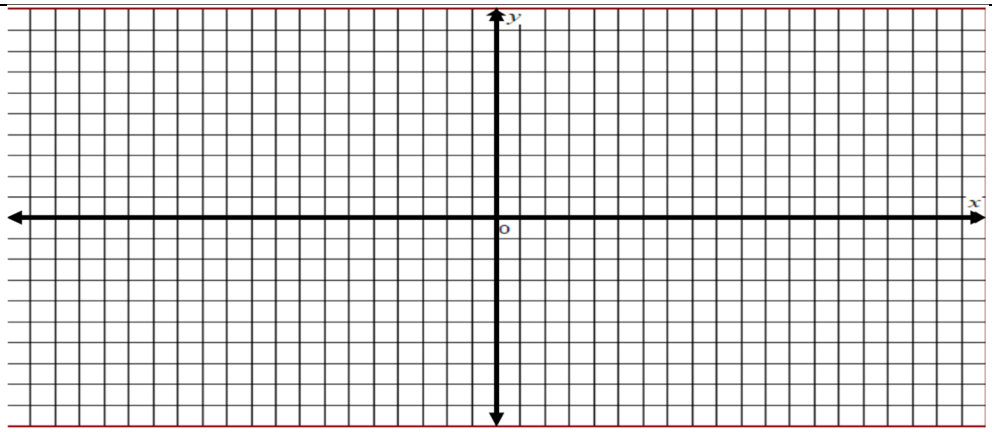
A: Amplitude

C:

D:

Period :

Domain : Range :



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

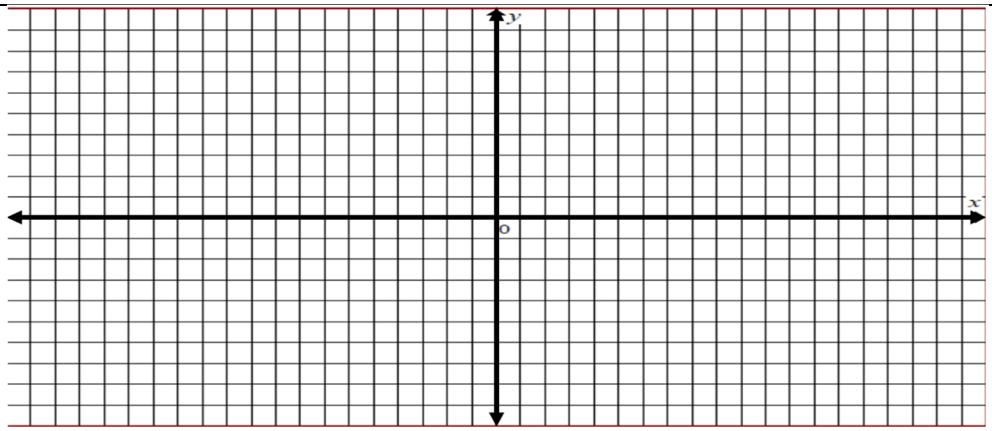
A: Amplitude

C:

D:

Period :

Domain : Range :



$y = -6\sin\left(\theta + \frac{\pi}{5}\right) - 1$

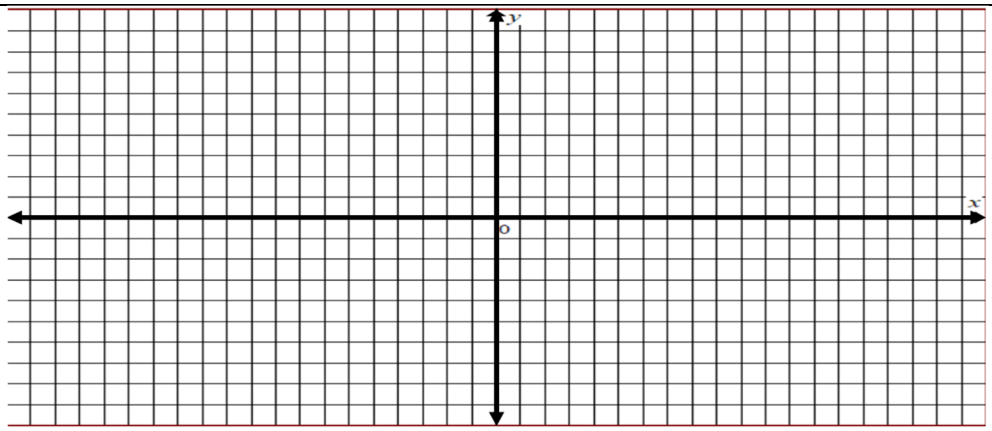
A: Amplitude

C:

D:

Period :

Domain : Range :



$y = 4.5\cos\left(\theta + \frac{\pi}{7}\right) - 3$

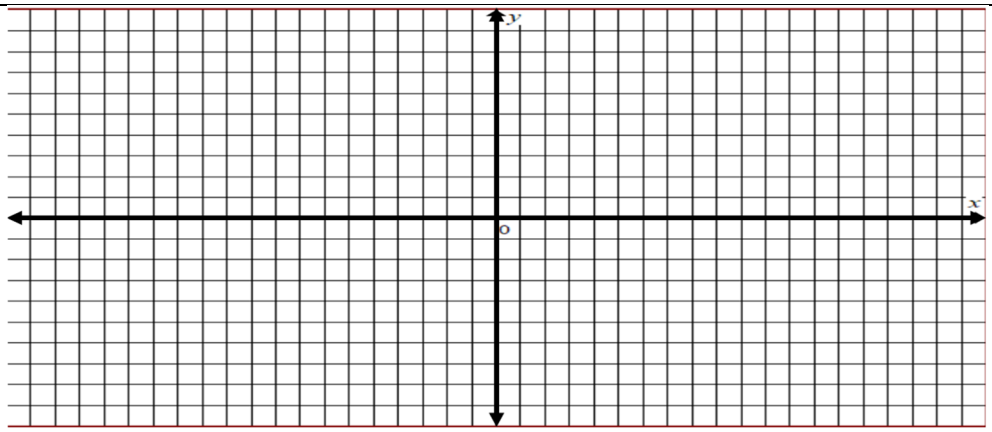
A: Amplitude

C:

D:

Period :

Domain : Range :



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10. When setting the increments on the X-axis for graphing a trigonometric function, how do we determine the value of 1 increment on the grid? Ie: Suppose we are given the equation $y = A\sin\left(\theta - \frac{\pi}{3}\right) + D$, where the period is 2π and there is a shift of $\frac{\pi}{3}$to the right. How do we determine the value of one increment? Explain:

11. What if we are given the equation $y = A\sin\left(\theta - \frac{\pi}{7}\right) + D$, where the period is 2π and there is a shift of $\frac{\pi}{7}$ to the right. How do we determine the value of one increment? Explain:

12. In order for the function $y = a\sin\left(\theta - c\right) + d$ to have an x-intercept, which of the following must be true?

$i)\ a < d \qquad ii)\ a + d = 1 \qquad iii)\ c < d \qquad iv)\ d > a \qquad v) a - d = 0$

13. Find the equation of a function in the form of $y = a\sin\left(x - b\right) + d$ with a maximum value of 3 when x=0 and a minimum of -2.

14. Find the amplitude and phase shift of the following function: $y = \sin^3\theta + \sin\theta\cos^2\theta$

15. Find the equation of a function in the form of $y = a\cos b\left(x - c\right) + d$ with the following:

    a. Maximum at 8, minimum at -2, phase shift of $\frac{\pi}{2}$ units to the right

    b. Maximum point $\left(\frac{\pi}{3}, 10\right)$ next minimum point $\left(\frac{4\pi}{3}, 4\right)$

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