Trigonometric Graphs Practice Name Answers

1. Which of the following represents the *range* of the trigonometric function $y = 7\sin(x)$?

(1) $(-7, 7)$ (3) $[0, 7)$

(2) $[-7, 7]$ (4) $(-7, 7]$

2. Which of the following is the period of $y = \cos(x)$?

(1) π (3) 2π

(2) 2 (4) $\frac{3\pi}{2}$

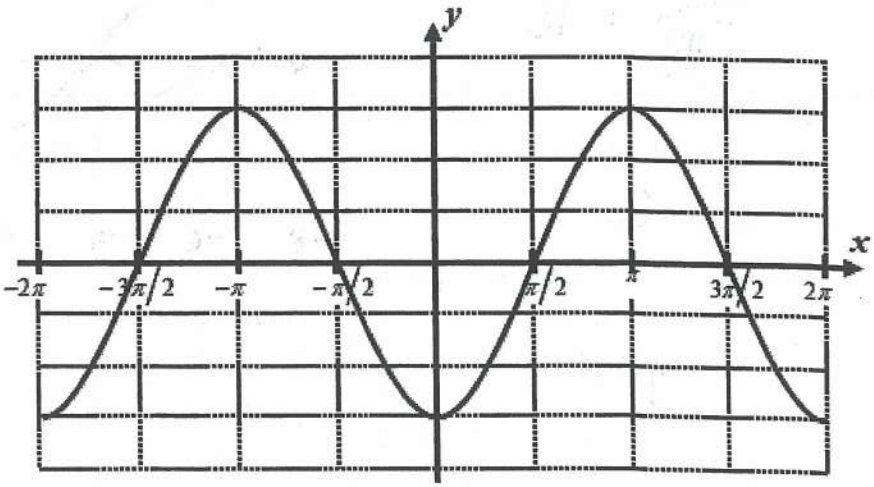
3. Which of the following equations describes the graph shown below?

(1) $y = 3\cos(x)$

(2) $y = -3\cos(x)$

(3) $y = 3\sin(x)$

(4) $y = -3\sin(x)$



4. State the range of each of the following sinusoidal functions in interval form.

(a) $y = 10\sin(x) - 3$

centerline = −3
amp = 10
−3 + 10 = 7
−3 − 10 = −13
$[-13, 7]$

(b) $y = -8\cos(x) + 2$

centerline = 2
amp = 8
2 + 8 = 10
2 − 8 = −6
$[-6, 10]$

(c) $y = 22\sin(x) + 30$

centerline = 30
amp = 22
30 + 22 = 52
30 − 22 = 8
$[8, 52]$

5.

***Exercise* #2:** The height of a yo-yo above the ground can be modeled using the equation $h = 1.75\cos(\pi t) + 2.25$, where h represents the height of the yo-yo in feet above the ground and t represents time in seconds since the yo-yo was first dropped from its maximum height.

(a) Determine the maximum and minimum heights that the yo-yo reaches above the ground. Show the calculations that lead to your answers.

Do an calc by graphing, or look at centerline and amplitude

$2.25 + 1.75 = 4$ ← max ht

$2.25 - 1.75 = .5$ ← min ht

(b) How much time does it take for the yo-yo to return to the maximum height for the first time?

8. min

$4 = 1.75\cos(\pi t) + 2.25$

↑ solve graphically → $y_1 = 4$, $y_2 = 1.75\cos(\pi x) + 2.25$

or solve algebraically

6. Consider the curve whose equation is $y = -2\cos\left(\frac{\pi}{8}x\right) + 3$.

(a) Determine the exact period of this sinusoidal function.

$\frac{2\pi}{(\frac{\pi}{8})} = 16$

(b) What is the amplitude of this sinusoidal function?

2

(c) What is the midline value of this sinusoidal function?

$y = 3$

(d) Sketch the function on the axes for a full period on both sides of the y-axis. Label the scale on your x-axis.s