

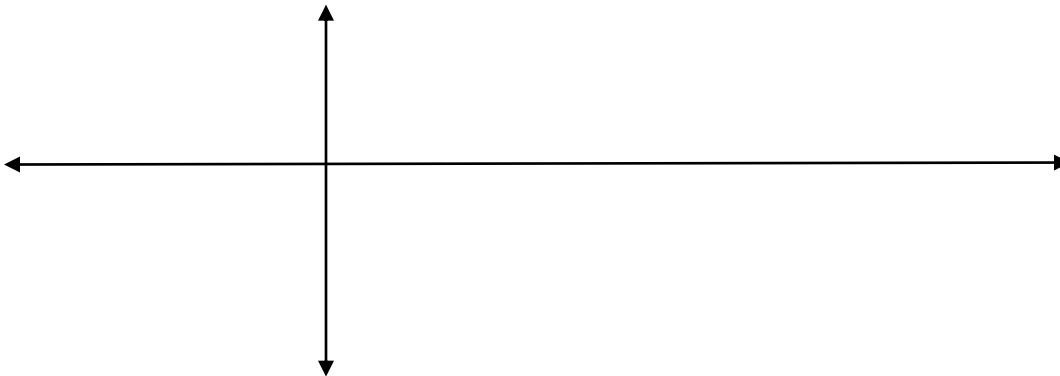
State the B, period, and amplitude of each function and describe any horizontal or vertical shifts. Sketch the graph of each function over one period only and carefully label the scale on each axis. **You must label the 5 key points.** (No decimals in the problem or you will not get credit)

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



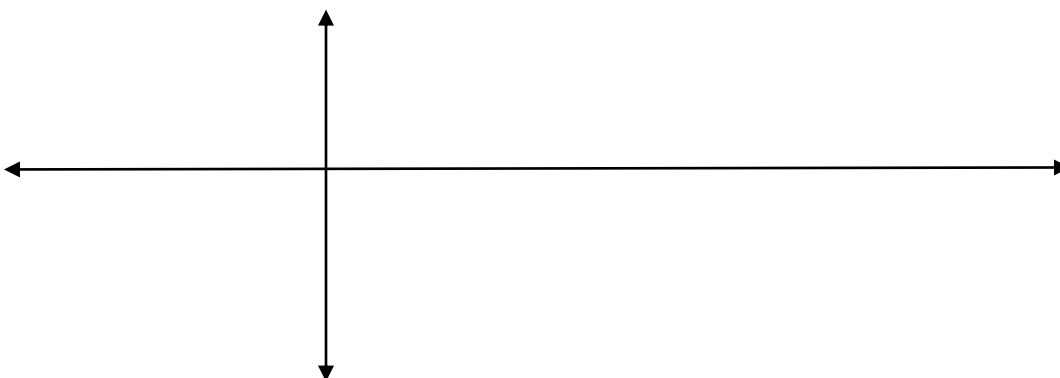
Amplitude: _____
 B: _____
 Period: _____
 Horizontal Shift: _____
 Vertical Shift: _____

2) $y = -4\sin(9\pi x)$



Amplitude: _____
 B: _____
 Period: _____
 Horizontal Shift: _____
 Vertical Shift: _____

3) $y = 4 \sin\left[\left(7x - \frac{3\pi}{2}\right)\right] + 3$



Amplitude: _____
 B: _____
 Period: _____
 Horizontal Shift: _____
 Vertical Shift: _____

4) Identify the characteristics of each sine or cosine graph. Then write an equation for each graph in terms of both sine and cosine. (Suggestion: Use your calculator to check your equations)

Amplitude: _____

Period: _____

B: _____

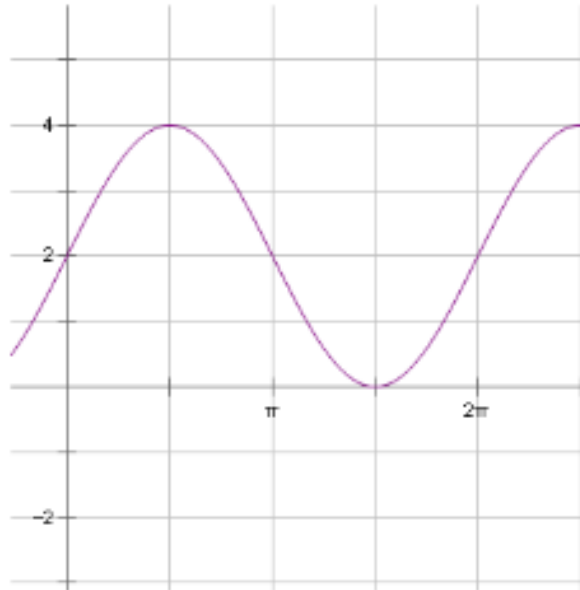
Vertical Shift: _____

Horizontal Shift (Sine): _____

Equation: _____

Horizontal Shift(Cosine): _____

Equation: _____



5) Identify the characteristics of each sine or cosine graph. Then write an equation for each graph in terms of both sine and cosine. (Suggestion: Use your calculator to check your equations)

Amplitude: _____

Period: _____

B: _____

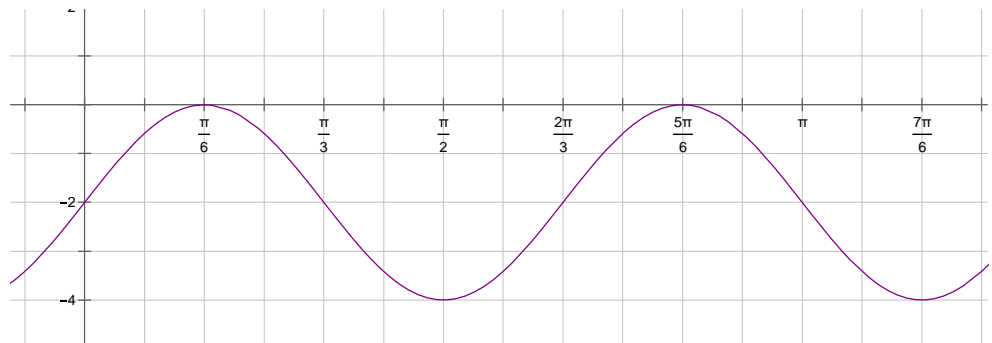
Vertical Shift: _____

Horizontal Shift (Sine): _____

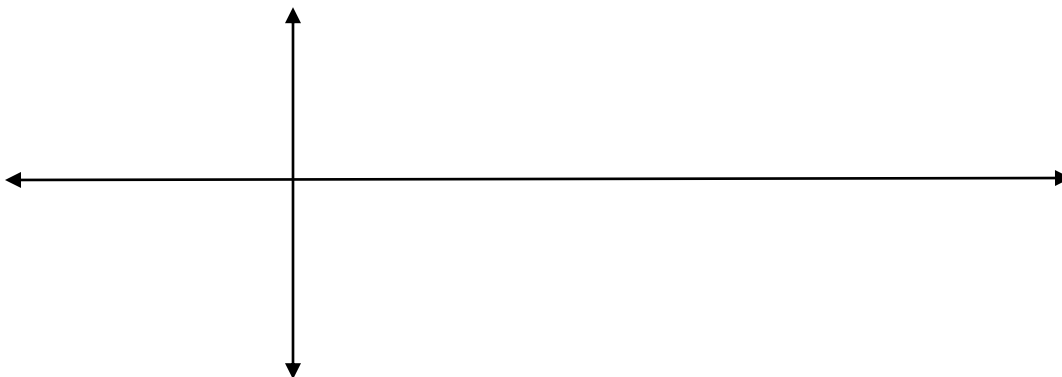
Equation: _____

Horizontal Shift(Cosine): _____

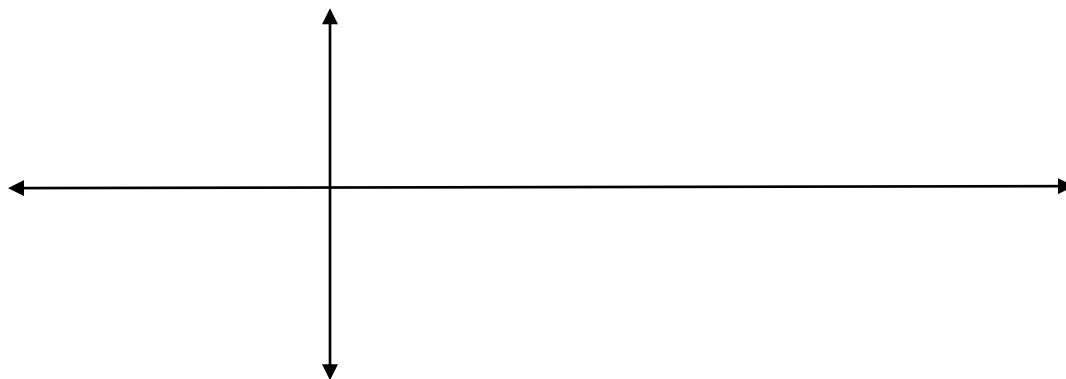
Equation: _____



6) Sketch the graph of $y = \sec(x)$. Also include the graph of its reciprocal function as a dashed line.



7) Sketch the graph of $y = \csc(x)$. Also include the graph of its reciprocal function as a dashed line.



Factor each of the following trigonometric expression.

8) $\cos^2 \theta - \cos \theta - 12$

9) $\csc^2 \theta - 3 \csc \theta - 10$

Simplify

10) $(\cos x + 1)^2 - (3 \cos x - 1)^2$

Verify each of the following trigonometric identities. You must show each step to prove they are identities of each other. **Do not change the right side, you must work from the left side and make it look like the right side.**

11) $\sin t + \cot t \cos t = \csc t$

12) $\frac{\cot \theta}{\csc \theta} = \cos \theta$

13) $\cos^2 \theta + \cos^2 \theta \tan^2 \theta = 1$

14) $(\sin y + \cos y)(\sin y - \cos y) = 1 - 2 \cos^2 y$

Rewrite the expression so that it is not in fractional form.

15) $\frac{\tan x}{1 + \sec x} + \frac{1 + \sec x}{\tan x}$

16) $\frac{5}{\tan x + \sec x}$