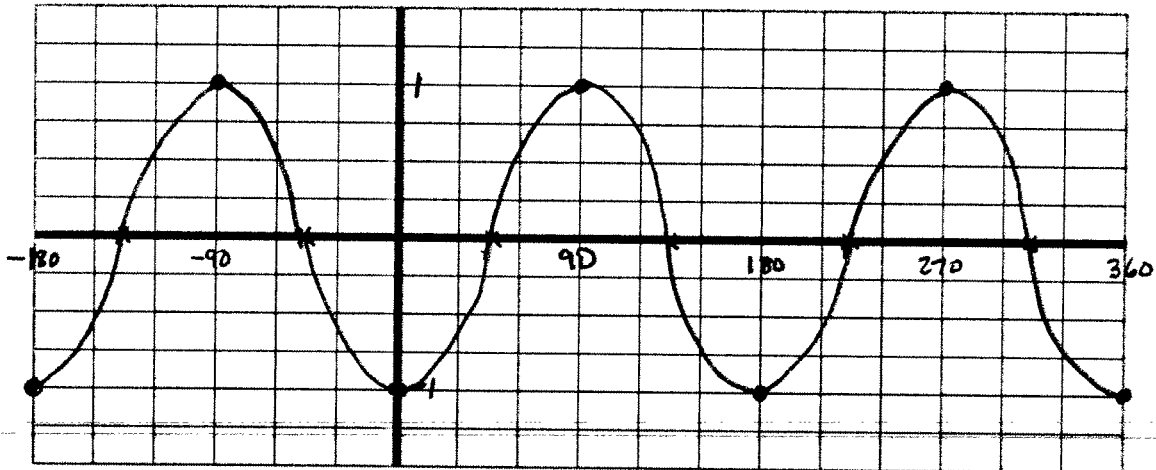


Name: ANSWERS Date: _____

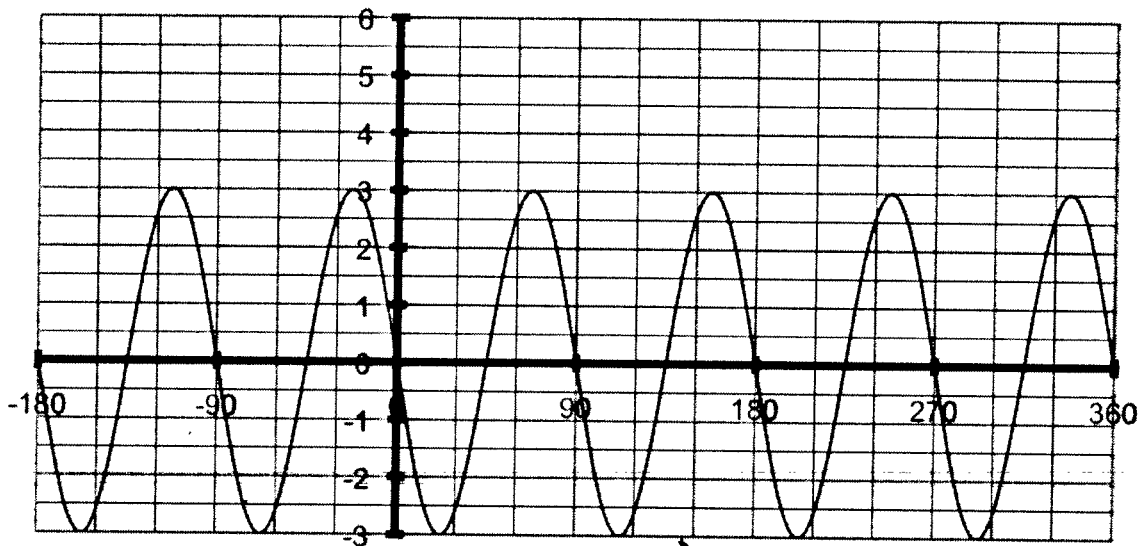
MCR3U

Quiz: Trigonometric functions/3
K

1. Sketch one cycle of the graph of
- $y = -\cos 2x$
- . Include an appropriate scale on each axis.

/3
A

2. Write an equation to match the following graph.



Vert shift: None

Amplitude: 3

Period: 90° $K = \frac{360}{90} = 4$ Phase shift: sin: 45° left (or right)
cos: 67.5° right

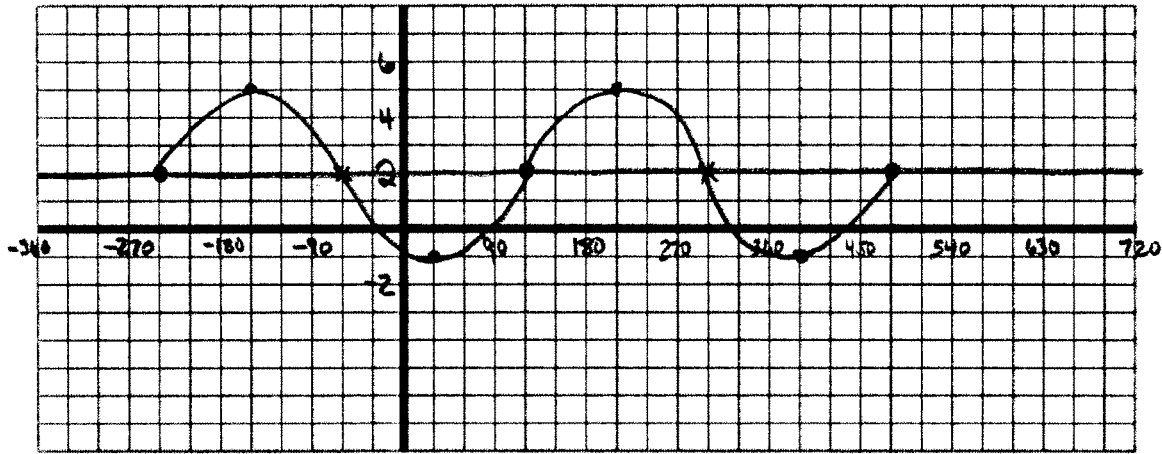
$$y = 3 \sin [4(x - 45)]$$

$$\text{or } y = 3 \cos [4(x - 67.5)]$$

$$\text{or } y = 3 \cos [4(x + 22.5)]$$

/5
K

3. Sketch two cycles of the graph of $y = 3\sin(x - 120^\circ) + 2$. Include an appropriate scale on each axis.



/1
C

4. The equation of a sine function is $y = 5\sin(3x - 60^\circ) + 2$. Explain why the phase shift is not 60° .

Must factor!

$$y = 5\sin[3(x - 20^\circ)] + 2$$

phase shift is 20°

/2
K

5. Determine the period of the function $y = \frac{5}{2}\cos\left[\frac{3}{4}(x - 40^\circ)\right] + \frac{1}{2}$.

3
K

6. Describe the transformations that must be applied to the graph of $f(x) = \sin x$ to obtain the graph of $g(x) = 3\sin 2x - 1$.

Vert. stretch $\times 3$
hor. compression to $\frac{1}{2}$ width
down 1

4
T

7. A sinusoidal function has an amplitude of 5 units, a period of 120° , and a maximum at $(0, 3)$. Represent the function with an equation using a sine or cosine function.

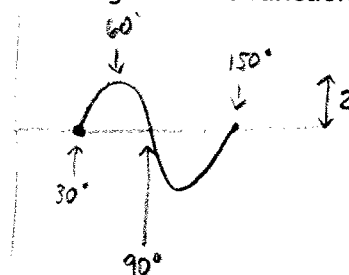
$$y = 5 \cos[3x] - 2$$

or $y = 5 \sin[3(x - 30^\circ)] - 2$

2
T

8. Represent the graph of $f(x) = 2\sin[3(x - 30^\circ)]$ with an equation using a cosine function.

Amplitude 2
Period 120°
Vert. Shift 0
Phase shift 30° right

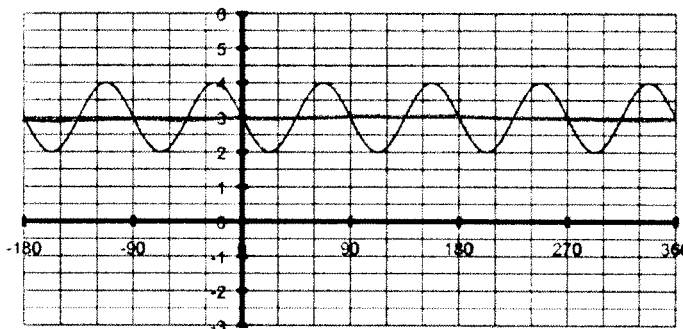


$$y = 2 \cos[3(x - 60^\circ)]$$

/7
A

9. Determine equations to model each of the following sinusoidal functions.

a)

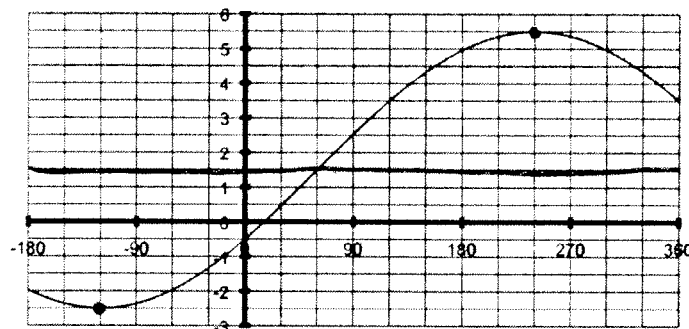


amplitude: 1
vert. shift: +3
period: 90°
phase shift: sin: 45° right
cos: 62.5° right

$$y = \sin[4(x-45)] + 3$$

$$y = \cos[4(x-62.5)] + 3$$

b)



Period: 720°
amplitude: 4
vertical shift: up $\frac{3}{2}$
phase shift: sin: 60° right
cos: 240° right

$$y = 4 \sin\left[\frac{1}{2}(x-60)\right] + \frac{3}{2}$$

$$y = 4 \cos\left[\frac{1}{2}(x-240)\right] + \frac{3}{2}$$

/5
A

10. Create a graph to represent ONE of the following sinusoidal functions. Label the amplitude and period on the graph.

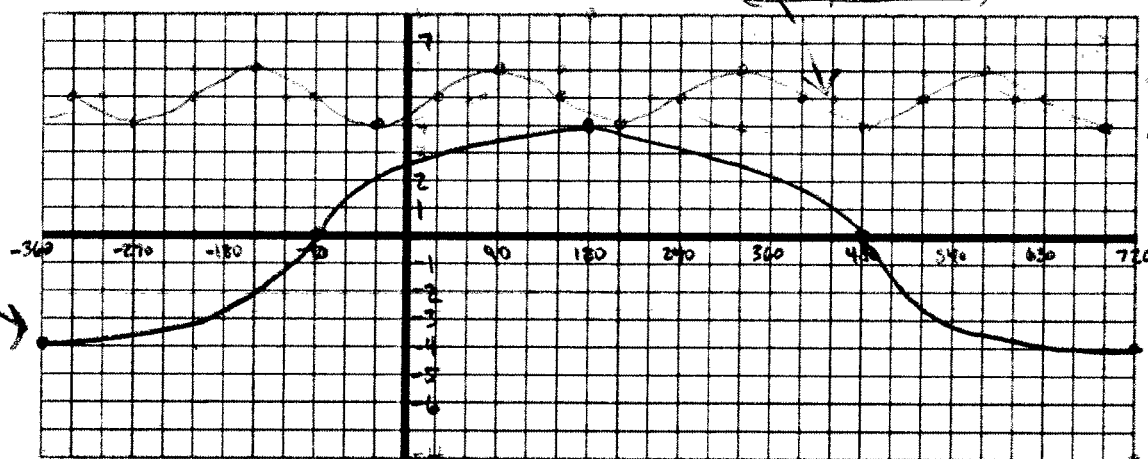
/1
T

$$y = 4 \sin \frac{1}{3}(x + 90^\circ)$$

or

$$y = -\cos(2x + 60^\circ) + 5$$

$$= -\cos[2(x+30^\circ)] + 5$$



Period

Amplitude

Amp 4