

# Warm Up

Put in standard form

$$3. \quad \frac{y+5}{3} = \cos(2\theta + 90^\circ) + 6$$

$$y - 5 = 3\cos(2\theta + 90^\circ) + 18$$

$$y = 3\cos(2\theta + 90^\circ) + 13$$

$$y = 3\cos[2(\theta + 45^\circ)] + 13$$

$$A=3$$

$$k=2$$

$$c=-45^\circ$$

$$D=13$$

$$P=180$$

Equation of  
Sinusoidal Axis:  $y=13$

Graph the following:

$$y = -2 \cos[2(x - 90)] - 3 \quad (x, y) \rightarrow \left( \frac{x}{k} + C, Ay + D \right)$$

A = 2

k = 2

C = 90

D = -3

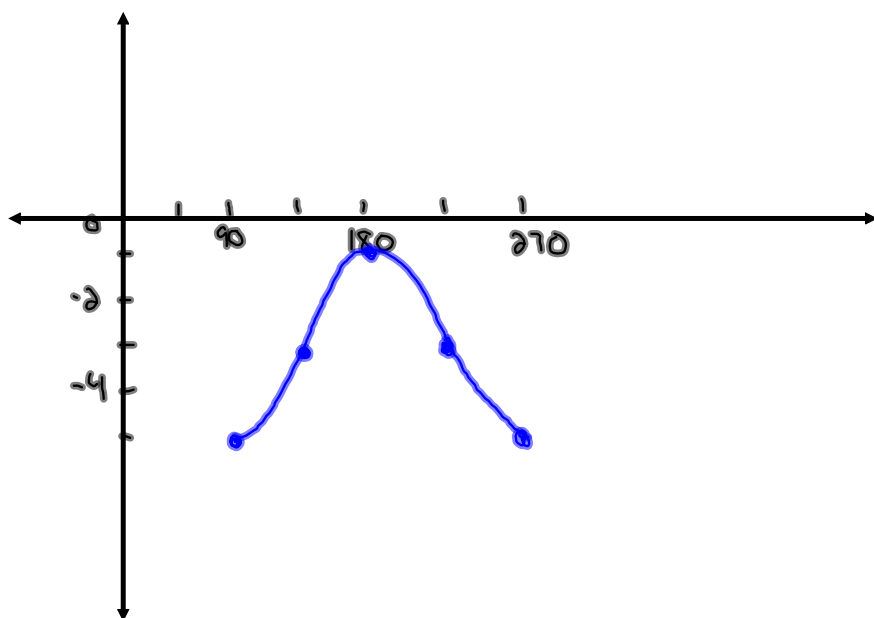
P = 180

$$y = -\cos x$$

x	y
0	-1
90	0
180	1
270	0
360	-1

New points after mapping

x	y
90	-5
135	-3
180	-1
225	-3
270	-5



## Questions from Assignment

$$⑤ \quad 2y + 3 = -4 \sin(4\theta - 60^\circ) - 3$$

$$\frac{2y}{2} = \frac{-4 \sin(4\theta - 60^\circ) - 6}{2}$$

$$y = -2 \sin[4(\theta - 15^\circ)] - 3$$

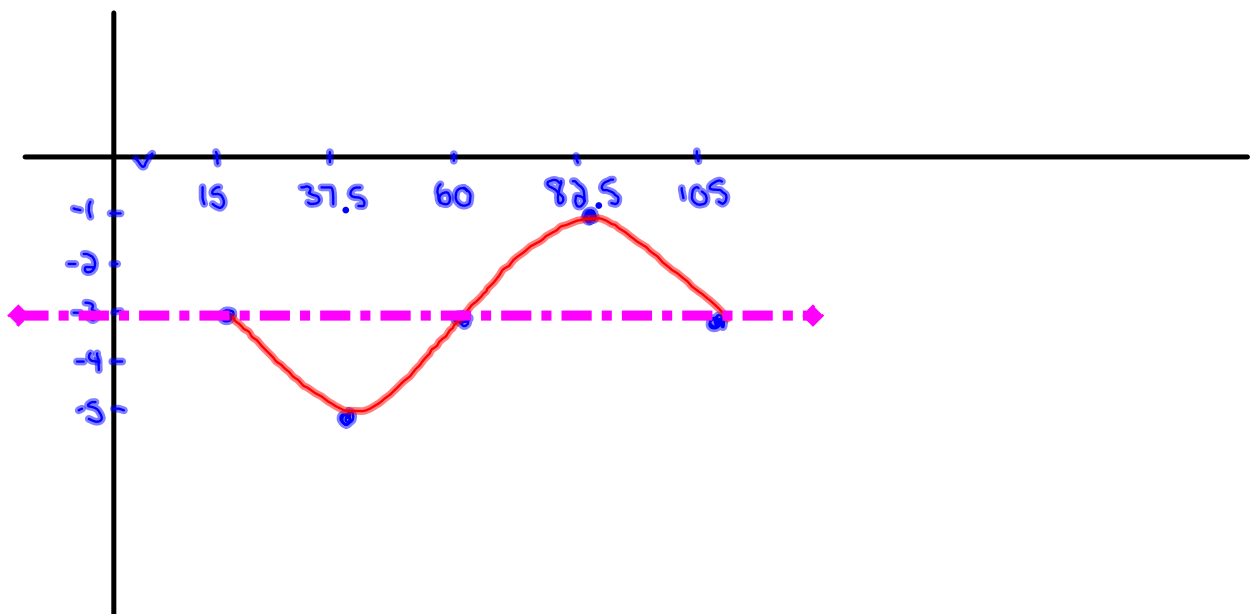
$$A = 2 \quad K = 4 \quad C = 15^\circ \quad D = -3$$
$$P = 90^\circ$$

$$y = -\sin x$$

X	y
0	0
90	-1
180	0
270	1
360	0

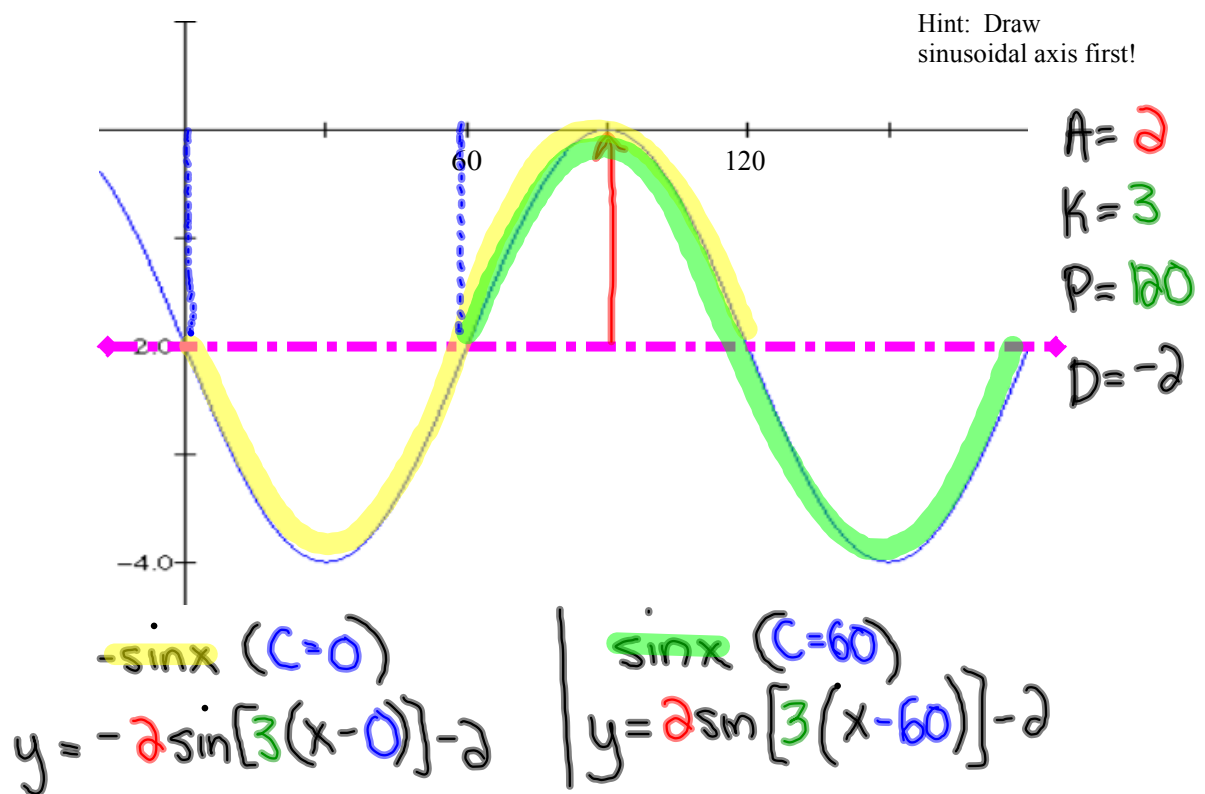


X	y
15	-3
37.5	-5
60	-3
82.5	-1
105	-3



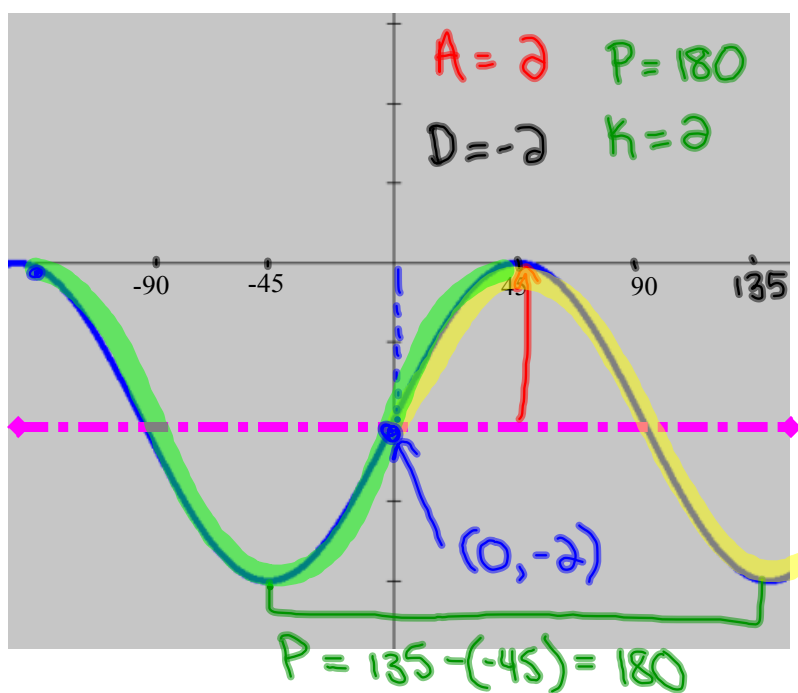
## Finding an Equation from a Graph:

Can you find an equation that describes this graph?



Check the equation using any point from the graph

## Develop an equation that corresponds to the graph



Hint: Draw sinusoidal axis first!

Look for a sine graph

$$C = 0$$

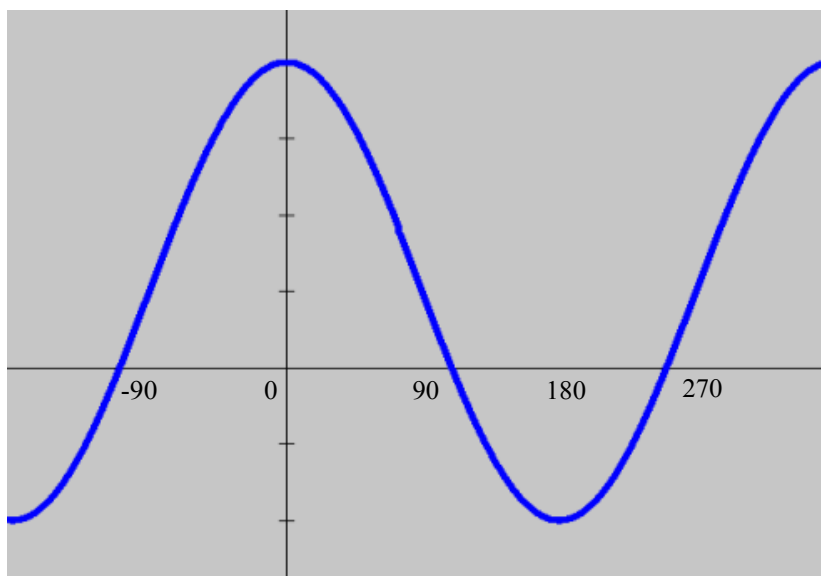
$$y = 2 \sin[2(x-0)] - 2$$

What about a cosine graph?

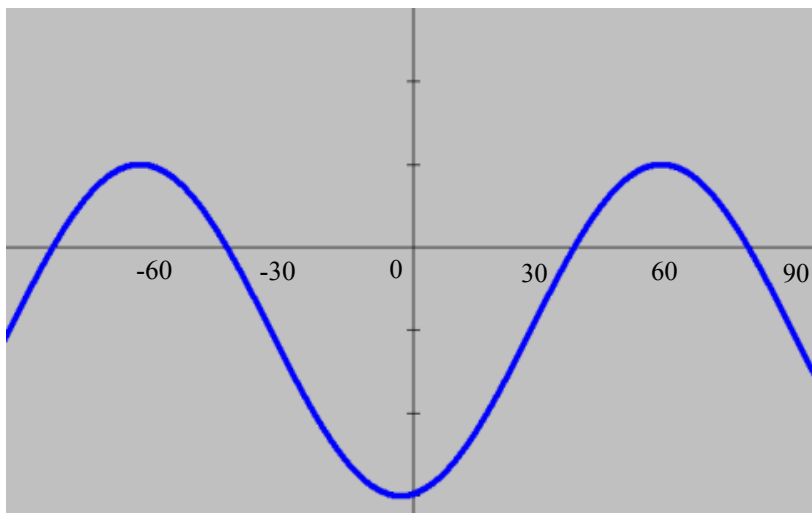
$$C = -135$$

$$y = 2 \cos[2(x+135)] - 2$$

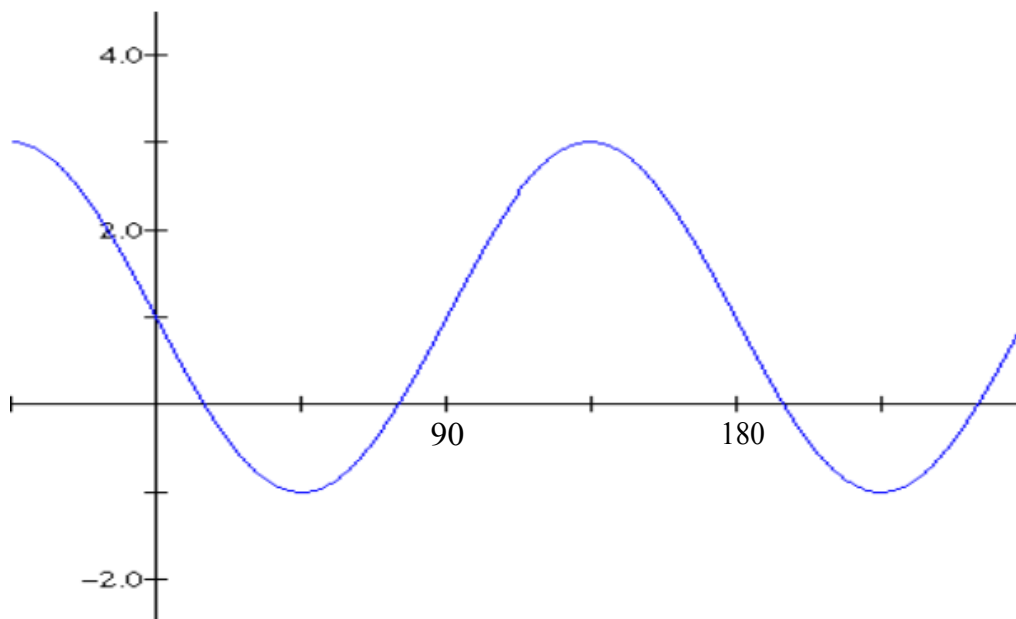
Determine a sine and a cosine equation for this graph



Write both a sine and cosine equation to describe the following graph:



Find four equations that match the graph:



Check with a calculator...



# Homework

Mathematical Modeling p. #28



## Attachments

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Worksheet - Sketching Sinusoidal relations (sept06).pdf