

Warm Up

Put in standard form

$$3 \cdot \left(\frac{y+5}{3} \right)^3 = \cos(2\theta + 90^\circ) + 6$$

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

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

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

$$A = 3$$

$$C = -45^\circ$$

$$P = 180^\circ$$

$$k = 2$$

$$D = 13$$

$$\text{Sin Axis: } y = 13$$

$$\textcircled{7} \quad \frac{1}{2}y - 1 = \sin(2\theta + 90^\circ)$$

$$\frac{1}{2}y = \sin(2\theta + 90^\circ) + 1$$

$$y = 2\sin(2\theta + 90^\circ) + 2$$

$$y = 2\sin[2(\theta + 45^\circ)] + 2$$

$$A = 2 \quad C = -45 \quad P = 180$$

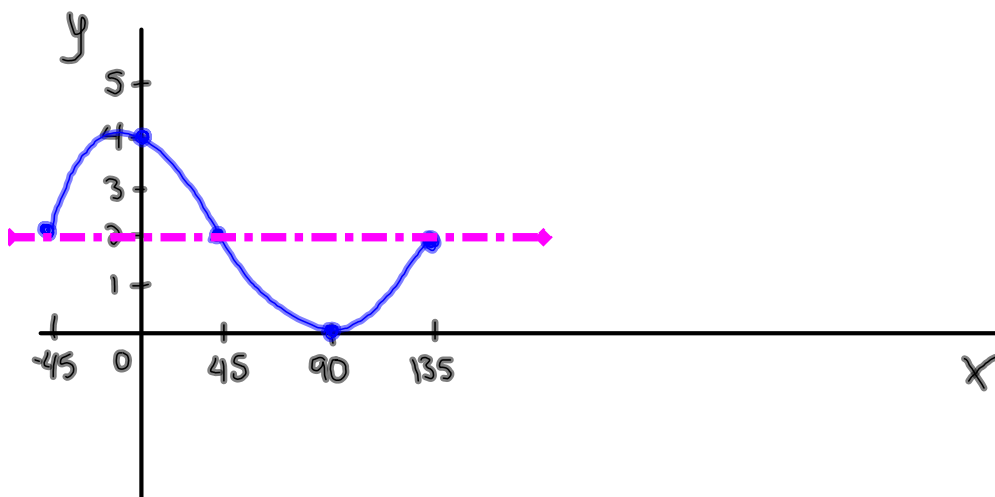
$$K = 2 \quad D = 2$$

$$y = \sin x$$

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

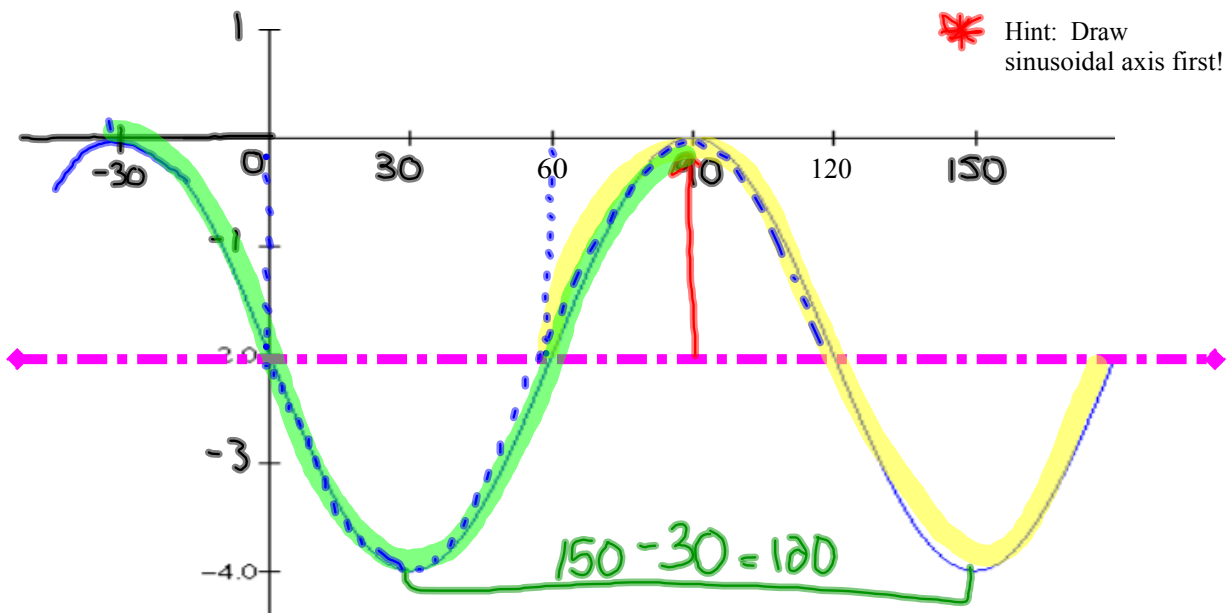


x	y
-45	2
0	4
45	2
90	0
135	2



Finding an Equation from a Graph:

Can you find an equation that describes this graph?



$$D = -2 \quad P = 120$$

$$A = 2 \quad K = \frac{360}{120} = 3$$

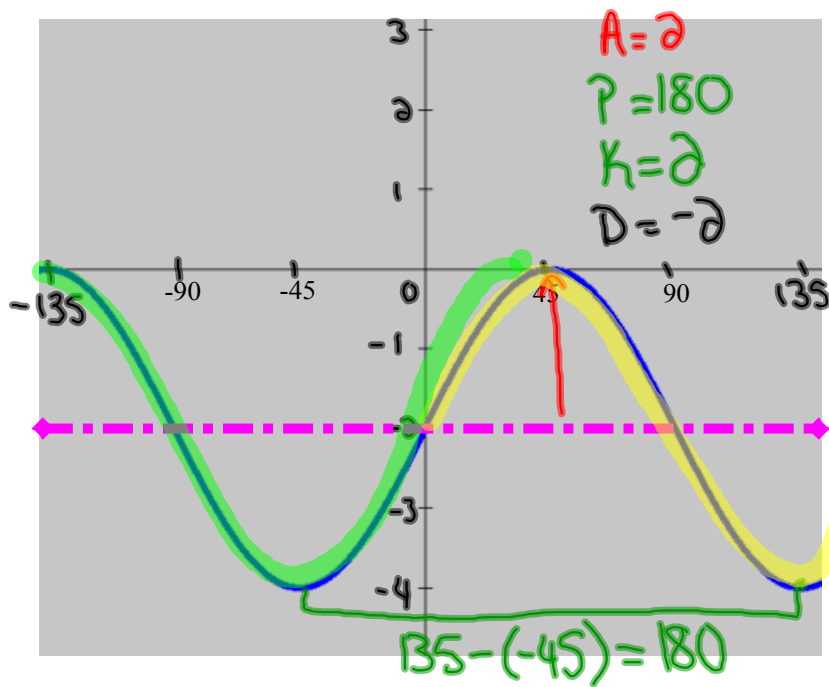
— $\sin x$
 $C = 60$

$$y = 2 \sin[3(x - 60)] - 2$$

— $\cos x$
 $C = -30$

$$y = 2 \cos[3(x + 30)] - 2$$

Develop an equation that corresponds to the graph



Hint: Draw sinusoidal axis first!

Look for a sine graph

$$C = 0$$

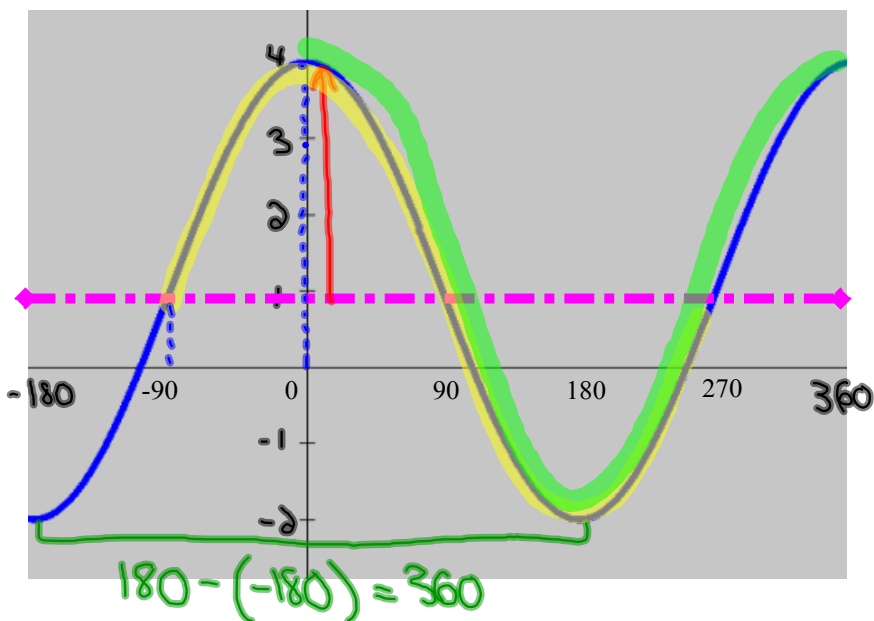
$$y = 2 \sin[2(x)] - 2$$

What about a cosine graph?

$$C = -135$$

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

Determine a sine and a cosine equation for this graph



$$D = 1$$

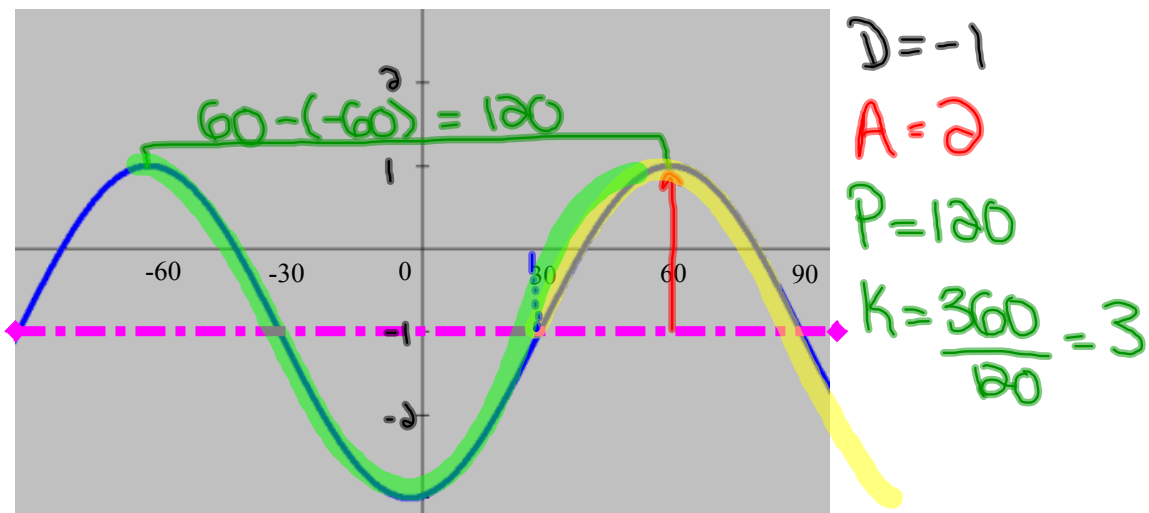
$$A = 3$$

$$P = 360$$

$$K = 1$$

$\sin x$ $C = -90$ $y = 3 \sin[1(x + 90)] + 1$ $y = 3 \sin(x + 90) + 1$	$\cos x$ $C = 0$ $y = 3 \cos[1(x)] + 1$ $y = 3 \cos(x) + 1$
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Write both a sine and cosine equation to describe the following graph:



$\sin x$

$$C = 30$$

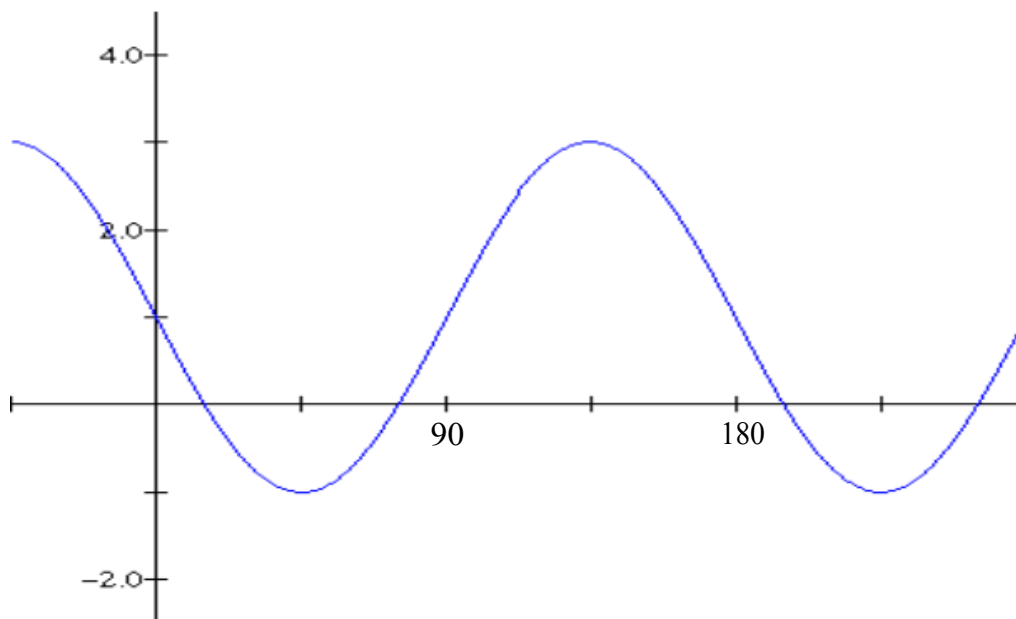
$$y = 2 \sin[3(x - 30)] - 1$$

$\cos x$

$$C = -60$$

$$y = 2 \cos[3(x + 60)] - 1$$

Find four equations that match the graph:



Check with a calculator...

Homework

Mathematical Modeling p. #28

Attachments

Worksheet - Sketching Sinusoidal relations (sept06).pdf