

# 2.4 Writing Equations

EQ: How do I write the equation of a sine or cosine graph?

Today's notes...

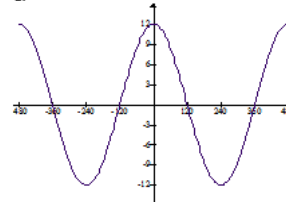
Glue or tape the graphs  
into the next blank  
page in your notebook.  
You can cut the graphs  
up if you need to.

Pre-Cal Unit 2

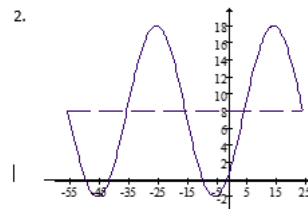
NOTES: Writing Equations of Sinusoids from Graphs

For each of the following graphs, write the equation of the sinusoidal function.

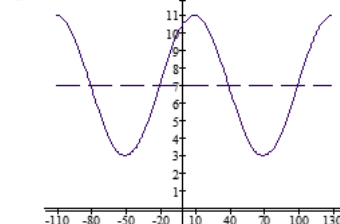
1.



2.



3.



## 2.4 Writing Equations

EQ:

How do I write the equation of a sine or cosine graph?

$$y = C \overset{\text{midline}}{\overset{\text{+ reflect}}{+}} A \sin B(x - D)$$

Amplitude

Period:  
 $\frac{360}{B}$  or  $\frac{2\pi}{B}$

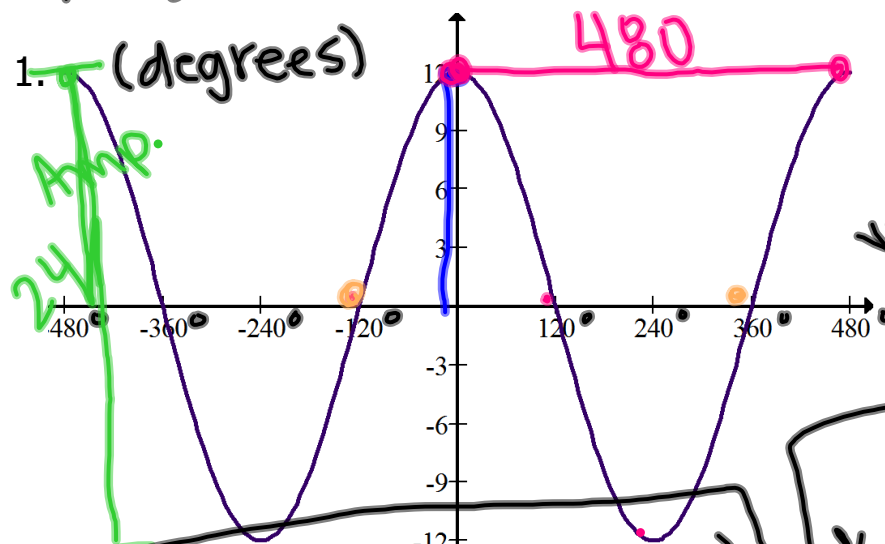
starting point  
cos  $\rightarrow$  high  
sin  $\rightarrow$  mid  $\uparrow$

# 2.4 Writing Equations

EQ: How do I write the equation of a sine or cosine graph?

For each of the following graphs, write the equation of the sinusoidal function.

MULTIPLE CORRECT ANSWERS



$$y = 0 + 12 \cos \frac{3}{4}(x + 480)$$

$$y = 12 \sin \frac{3}{4}(x - 360)$$

Y-values

Amplitude: total height  
 $A = \frac{24}{2} = 12$

Midline:  
 top - A  
 bottom + A  
 $12 - 12 =$   
 $C = 0$

Period: top to top  
 bottom to bottom  
 Per: 480

$$B = \frac{360}{\text{Per}} = \frac{360}{480} = \frac{3}{4}$$

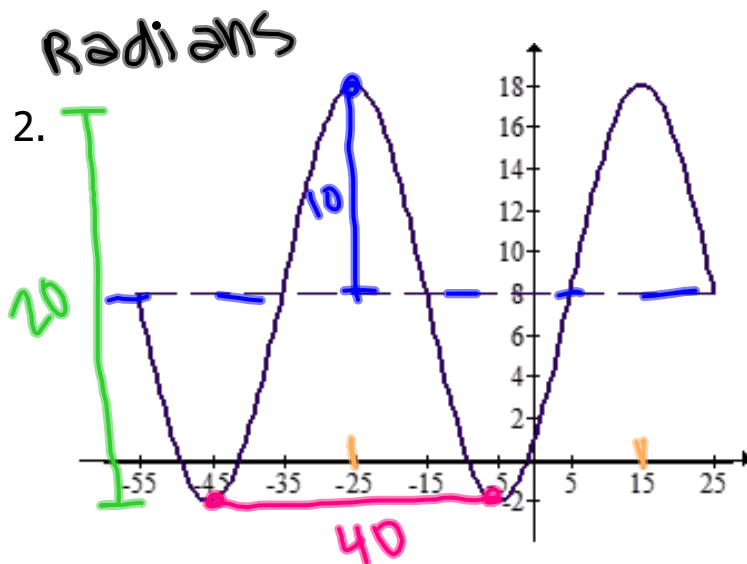
Starting Point (D)  
 (high) cos -480 or 0 or 480  
 (mid) sin -120 or 360

# 2.4 Writing Equations

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For each of the following graphs, write the equation of the sinusoidal function.



$$A: \frac{20}{2} = 10$$

$$C: 18 - 10 = 8$$

$$B: \text{period} = 40$$

$$\frac{2\pi}{40} = \frac{\pi}{20}$$

$$D: \cos -25 \text{ or } 15$$

$$\sin -35 \text{ or } 5$$

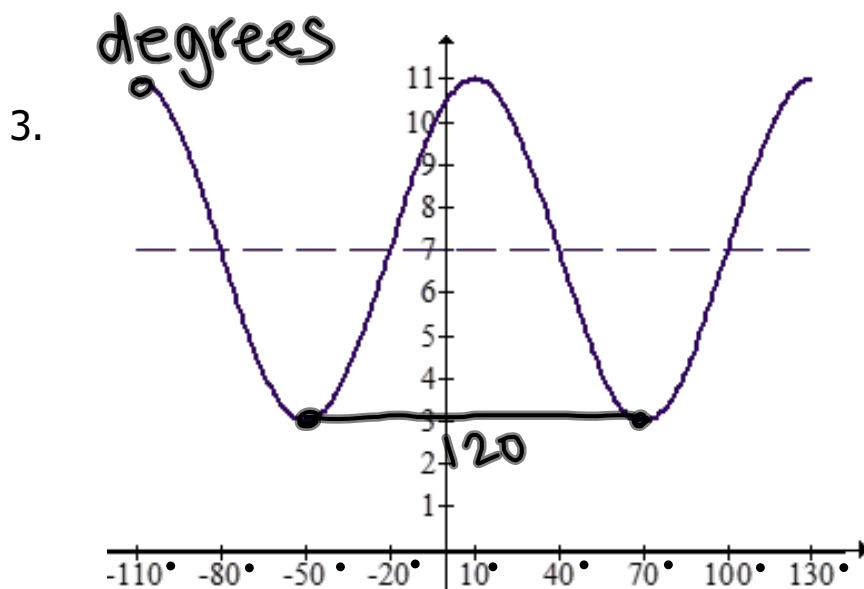
$$y = 8 + 10 \cos \frac{\pi}{20} (x - 15)$$

# 2.4 Writing Equations

EQ:

How do I write the equation of a sine or cosine graph?

For each of the following graphs, write the equation of the sinusoidal function.



$$A = 4 \quad C = 7$$

$$B = \frac{360}{120} = 3$$

$$D: \begin{array}{l} \cos -110 \text{ or } 10 \text{ or } 130 \\ \sin -20 \text{ or } 100 \end{array}$$

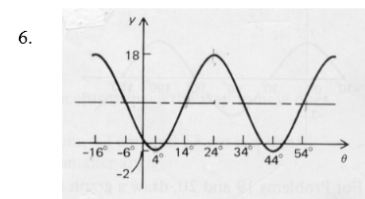
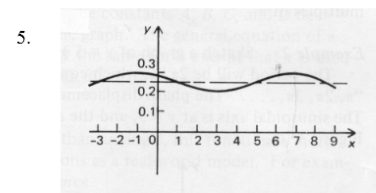
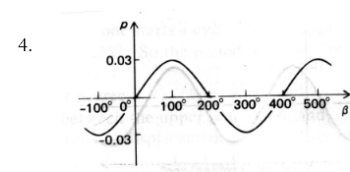
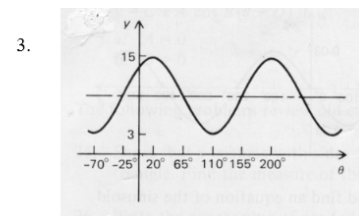
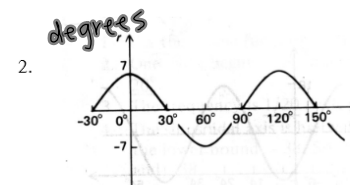
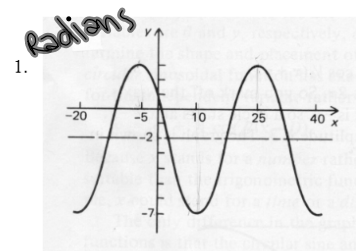
$$y = 7 + 4 \cos 3(x + 110) \text{ ETC.}$$

#1-6

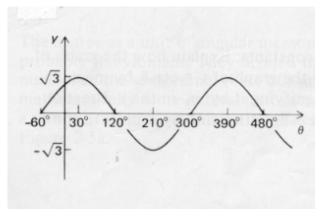
## 2.4 Writing Equations from Graphs

Name: \_\_\_\_\_

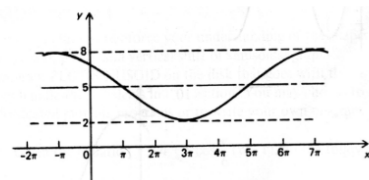
Given the graph write an equation. You will need to look closely at the x-axis to determine if the x values are in terms of degrees or radians.



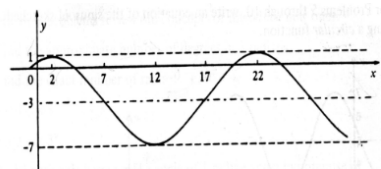
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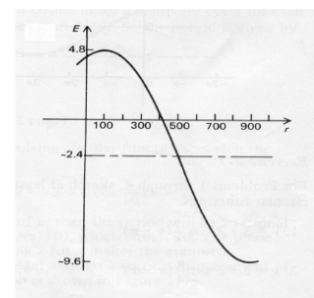
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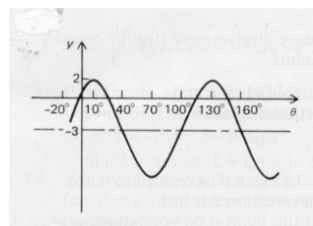
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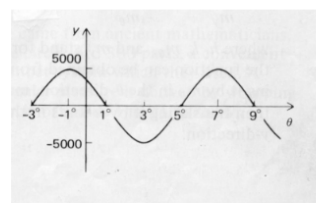
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11.



12.



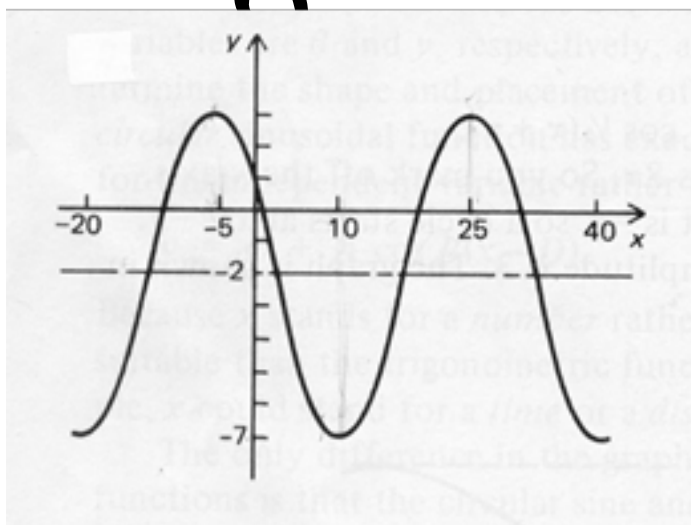
## 2.4 Writing Equations

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### Closing

1.



Write the equation as a  
positive COSINE function.

A=

Period:      B=

C=

D=

