2.4 Writing Equations

10/3 - 10/7

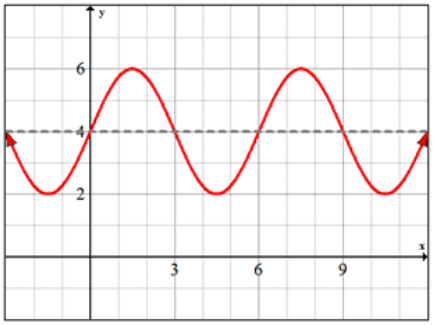
Turn in signed progress reports!!!

↑ due Thurs.

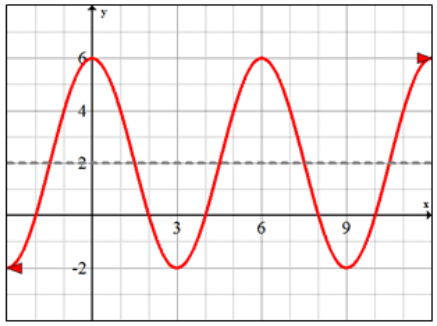
Warm-Up Monday

Which of the following graphs best represents $y = 4 - 2\sin\frac{\pi}{3}(x-3)$?

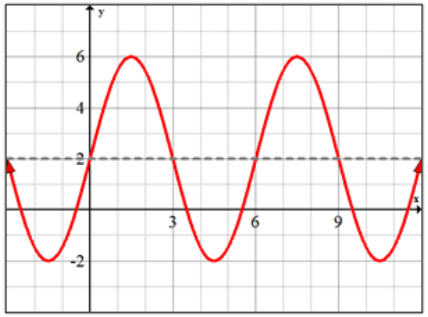
A.



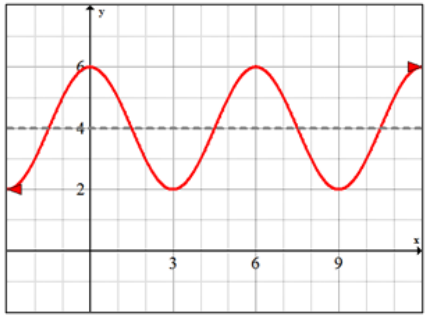
B.



C.



D.



About Me

1. Would you rather be able to talk with animals or speak all foreign languages?

2. Would you rather win the lottery or live twice as long?

2.4 Writing Equations

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

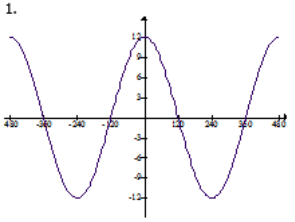
Today's notes...

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

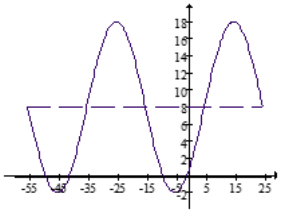
Pre-Cal Unit 2
NOTES: Writing Equations of Sinusoids from Graphs

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

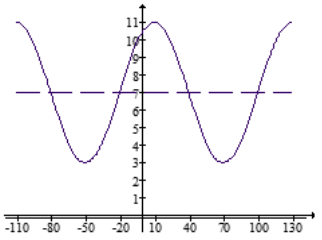
1.



2.



3.



2.4 Writing Equations

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

$$y = C + A \sin B(x - D)$$

C = midline

A = Amplitude

B ⇒ period

$\frac{2\pi}{B}$ OR $\frac{360}{B}$

D = starting point (horizontal shift)

cos → high

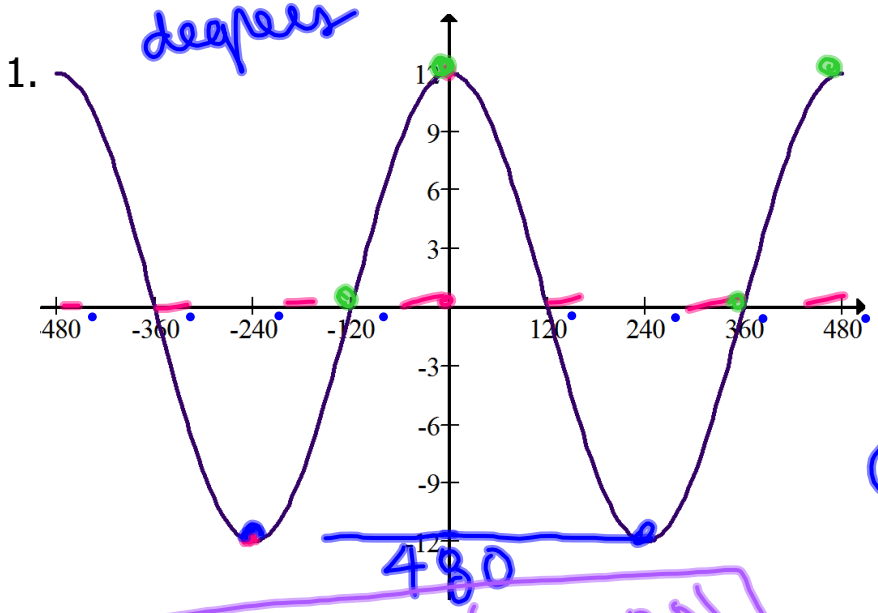
sin → mid

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.

1. deepest



480

$Y = 12\cos\frac{3}{4}(X-480)$

$Y = C + A\sin B(X-D)$

Amplitude: $\frac{\text{total height}}{2}$

① $A = \frac{24}{2} = 12$

② Top -12 Bottom $+12$ (Amp) $C = 0$

③ Period: top to top, bottom to bottom

Period $= 480$

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

④ cos D: 0 or 480

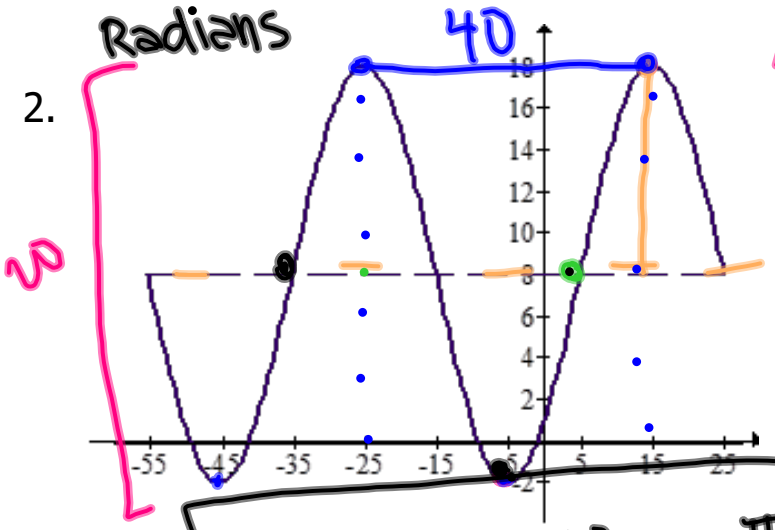
sin D: -120 or 360

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.

2.



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

C: 8

y-values

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

Period: 40

D: cos → 15 or −25 (trip)

sin → 5 (mid)

x-values

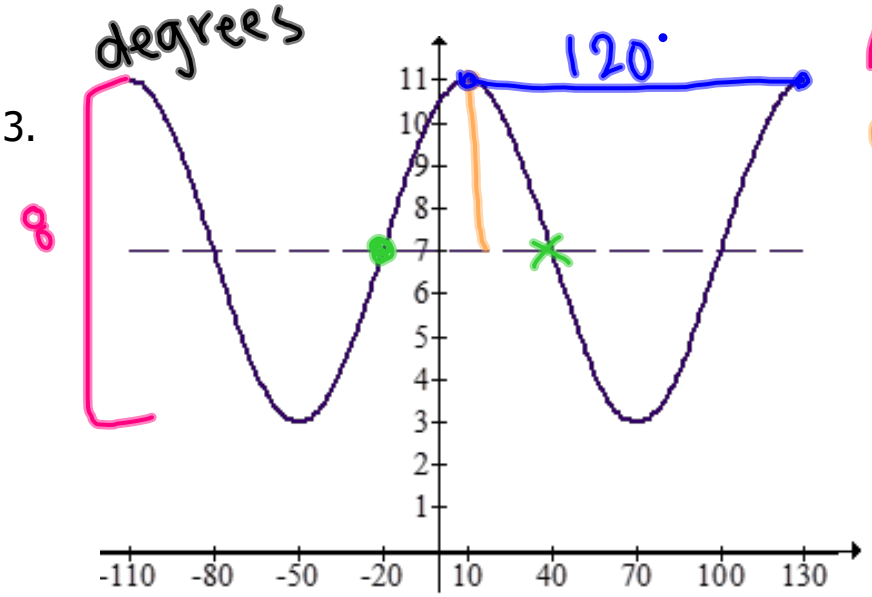
$y = 8 + 10\cos\frac{\pi}{20}(x-15)$

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.

3.



A: $\frac{8}{2} = 4$

C: $11 - 4 = 7$

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

Period: 120

D: sin -20 (mid → top)

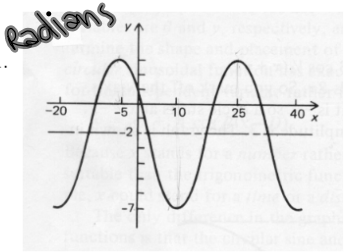
$y = 7 + 4\sin 3(x + 20)$

#1-6

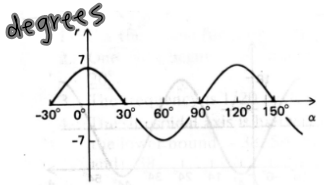
2.4 Writing Equations from Graphs **Name:**_____

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.

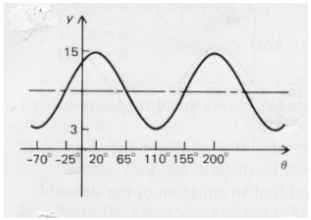
1. radians



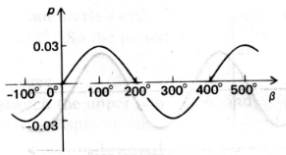
2. degrees



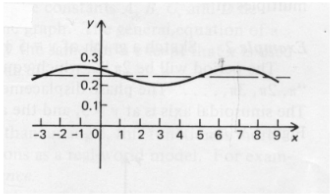
3.



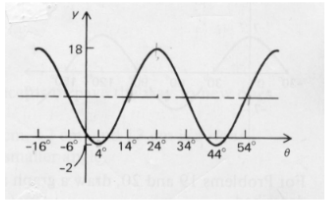
4.

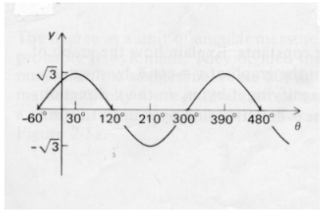


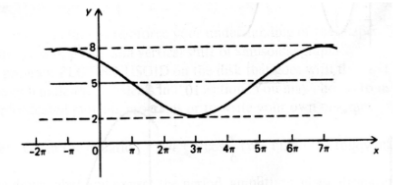
5.

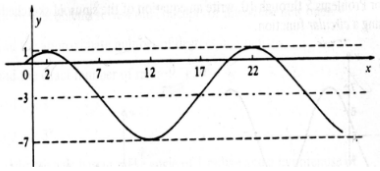


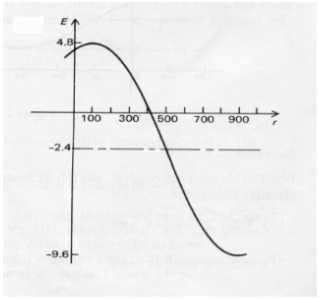
6.

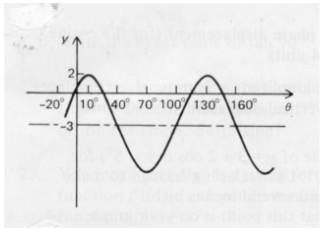


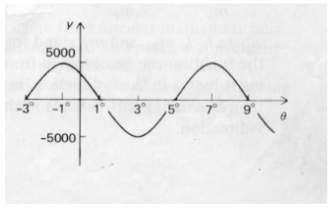
7. 
y
√3
-60° 30° 120° 210° 300° 390° 480° θ
-√3

8. 
y
8
5
2
-2π -π 0 π 2π 3π 4π 5π 6π 7π x

9. 
y
1
0 2 7 12 17 22 x
-3
-7

10. 
E
4.8
100 300 500 700 900 r
-2.4
-9.6

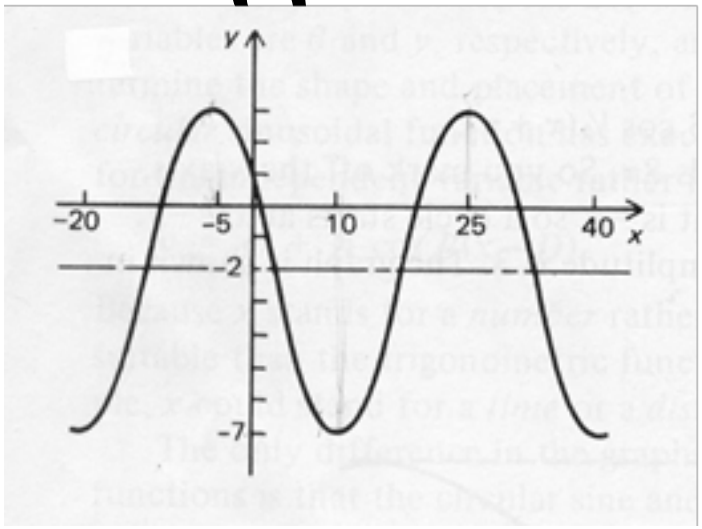
11. 
y
2
-20° 10° 40° 70° 100° 130° 160° θ
-3

12. 
y
5000
-3° -1° 1° 3° 5° 7° 9° θ
-5000

2.4 Writing Equations

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

Closing

1. 

Write the equation as a positive COSINE function.

A=

Period: B=

C=

D=