Algebra II Chapter 6/7 Review Problems

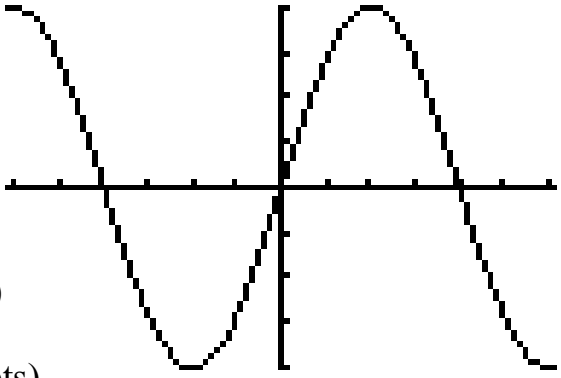
The first page is a simple calculator only page.

1. Find the following values exactly. You will be given the first quadrant of the unit circle on the test (2 pts each)

a) $\cos\left(\pi/4\right)$ b) $\sin\left(5\pi/3\right)$ c) $\tan\left(-3\pi/4\right)$

d) $\sec\left(3\pi/2\right)$ e) $\csc\left(5\pi/6\right)$

2. Use the given graph to do the following (the *x* and *y* scale are both 1)



a) What is the period? (1 pt)

b) What is the amplitude? (1 pt)

c) Write an equation for this curve using sine (2 pts)

d) Write an equation for this curve using cosine (2 pts)

(EC) Write an equation for this curve using –sine

(EC) Write an equation for this curve using –cosine

3. Which is bigger $\sin\left(\frac{8\pi}{9}\right)$ or $\sin\left(\frac{7\pi}{8}\right)$? Justify your answer. (2 pts)

4. If the terminal point for the angle *t* is (a,b), find the following in terms of a and b (1 pt each)

a) the terminal point for $-t$ b) the terminal point for $\pi + t$

c) the terminal point for $\pi - t$ d) the terminal point for $5\pi + t$

5. Extra Credit: What angle has a terminal point of (b,a)?

6. For each equation, give its period, average value (middle), amplitude and phase shift. Then graph it on an axis system that allows the entire graph to be seen for one period. Please label the coordinates of the first and last point of your graph. (5 pts each)

a) $y = 3\sin x + 4$ b) $y = 2\cos\left(\frac{\pi}{2}(x-1)\right)$

Use your graphing calculator freely on this page.

7. When I visited London last summer, I rode the world's largest Ferris wheel. Being a geek, I calculated a formula that kept track of my height off the ground as a function of time. The formula is $h(t) = 255 - 225\cos\left(\frac{\pi}{15}t - 32\right)$ where the height is measured in feet and *t* is the minutes after the ride has started.

a) What was my maximum height? (2 pts)

b) What was my minimum height? (2 pts)

c) What height did I start the ride at? (2 pts)

d) What was my height 9 minutes into the ride? (2 pts)

e) How long did it take me two make two complete revolutions around the wheel? (2 pts)

f) In my first revolution, for how long was I at a height of 420 feet or greater? (3 pts)

8. The number of tree sloths on the island of Patmos vary periodically between a maximum of 480 and a minimum of 140. If at $t = 0$, there are 480 and 45 days later, there are 140:

a) Write a function that represents the number of tree sloths as a function of time. (3 pts)

b) If at some time, 265 tree sloths are present, how many days later will 265 be present again? (2 pts)

Answers:

1. a) $\frac{\sqrt{2}}{2}$ b) $\frac{-\sqrt{3}}{2}$ c) 1 d) undefined e) 2

2. a) 8 b) 4 c) $y = 4\sin(\frac{\pi}{4}x)$ d) $y = 4\cos(\frac{\pi}{4}(x-2))$ EC: $y = -4\sin(\frac{\pi}{4}(x+4))$ EC: $y = -4\cos(\frac{\pi}{4}(x+2))$ 3. $\sin\left(\frac{7\pi}{8}\right)$ because *y* coordinate is bigger

4. a) (a,-b) b) (-a,-b) c) (-a,b) d) (-a,-b) 5. $\pi/2 - t$

6. a) P = 2π, AV = 4, A = 3, PS = 0 b) P = 4, AV = 0, A = 2, PS = 1 to the right

7. a) 480 ft b) 30 ft c) 67.3 ft d) 195 ft e) 60 mins f) 7.16 mins

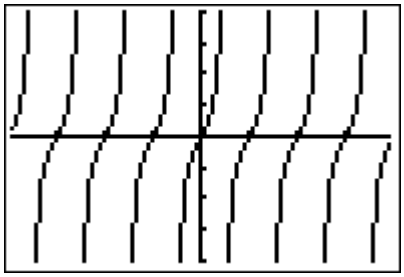
8. a) $y = 310 + 170\cos(\frac{\pi}{45}t)$ B) 37.33 DAYS (Hint: find 2 times when it occurs)

Honors Problems for Ch 7 Practice Problems:

Mix & match the pretty pictures with the cool equations: (1 pt each)

A. $y = \frac{1}{2}\tan x$ B. $y = \tan 2x$ C. $y = \cot x$

D. $y = \tan\frac{1}{2}(x - \frac{2\pi}{3})$ E. $y = 3\csc x$ F. $y = 1 + \sec x$



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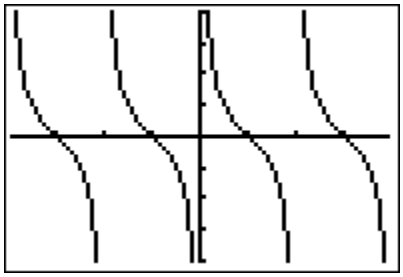

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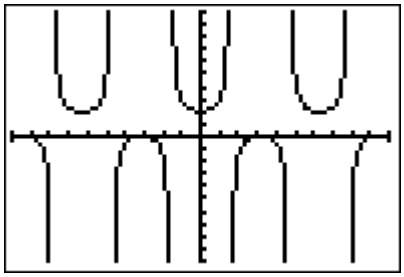

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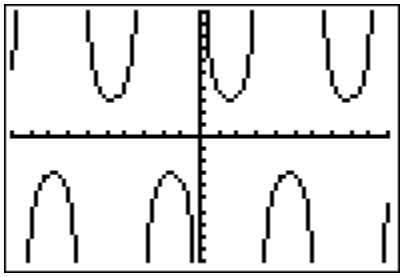

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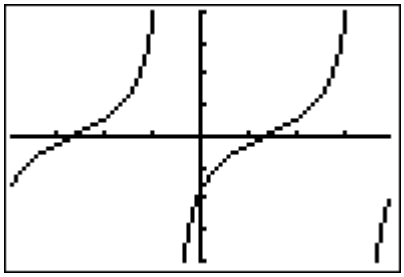

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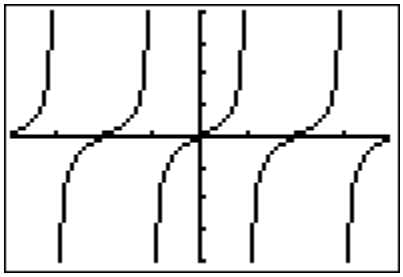

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Honors Answers"
B C
F E
D A