math assignment 6

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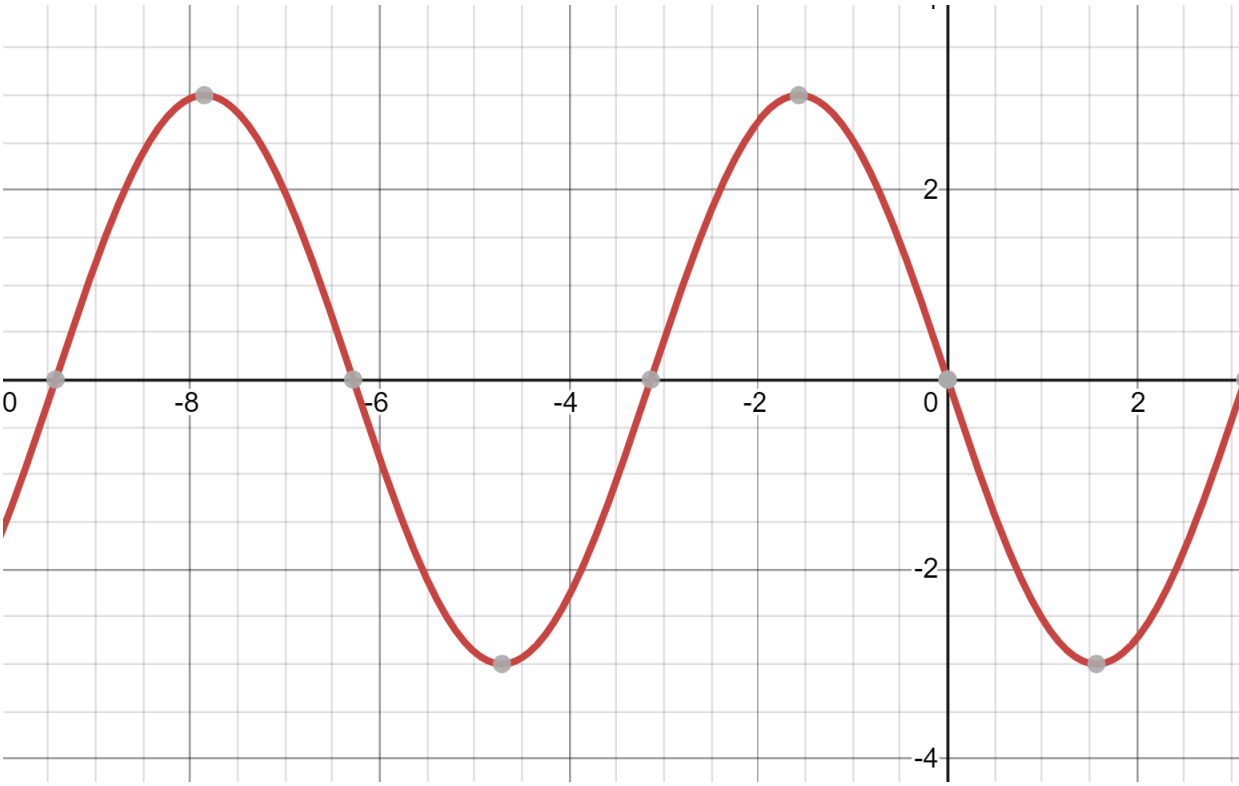
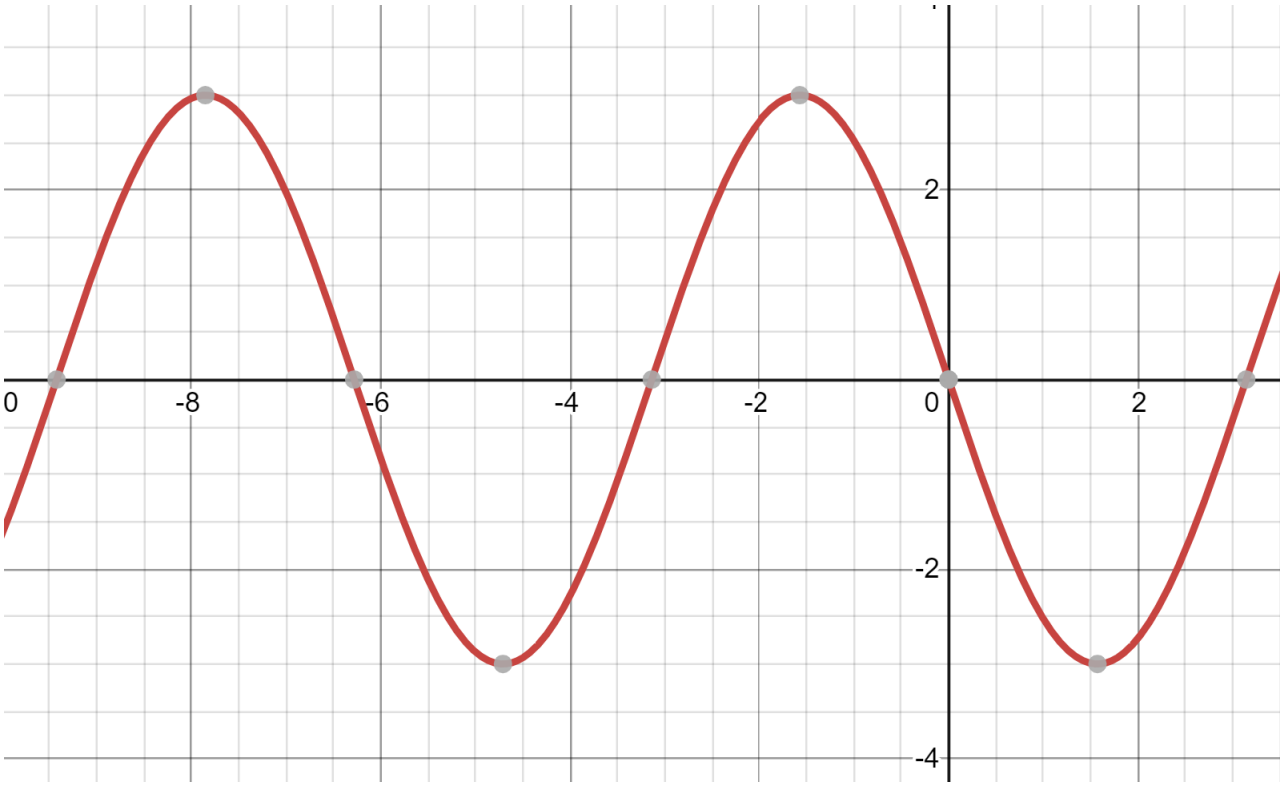
1 Math assignment 6

Page 409 question 1
sketch a graph of$F(X) = -3sin(x)$



Summary: This problem was easy because it is not too difficult to graph these functions.

Page 409 Question 3
Sketch a graph for $f(x) = 2cos(x)$



Summary: This problem was not too bad just graphing so it wasn't too hard.

Page 410 Question 11
for each equation find the horizontal shift amplitude period and mid line.

$$y = 3sin(8(x + 4)) + 5$$

$$A = |3| = 3$$

$$P = 2pi/8 = pi/4$$

$$HS = bx - c = 0$$

$$HS = 8x + 32 = 0$$

$$HS = -4$$

$$M = 5$$

Summary: This question was not too bad just a few new terms that I had to learn and figure out how to solve but overall it wasn't too hard

Page 410 Question 13
for each equation find the horizontal shift amplitude period and mid line

$$y = 2sin(3x - 21) + 4$$

$$A = |2| = 2$$

$$p = 2pi/3$$

$$HS = 3x - 21 = 0$$

$$HS = 7$$

$$M = 4$$

Summary: this problem was not too bad once again it was a lot of just plugging things into the equation and pulling it out from the original.

Page 411 question 21 Outside temperature over the course of a day can be modeled as a sinusoidal function. Suppose you know the temperature is 50 degrees at midnight and the high and low temperature during the day are 57 and 43 degrees, respectively. Assuming t is the number of hours since midnight, find a function for the temperature, D, in terms of t.

$$A = 7$$

$$M = 50$$

$$P = 2pi/24$$

$$D(T) = 50 - 7sin(2pi/24T)$$

Summary:This question was a little tricky because it was a word problem but after reading carefully i kept finding that it told me exactly what everything was.

Page 411 Question 23 A Ferris wheel is 25 meters in diameter and boarded from a platform that is 1 meters above the ground. The six o'clock position on the Ferris wheel is level with the loading platform. The wheel completes 1 full revolution in 10 minutes. The function h(T) gives your height in meters above

the ground t minutes after the wheel begins to turn.
a. Find the amplitude, mid line, and period of h(T).
b. Find a formula for the height function h(T).
c. How high are you off the ground after 5 minutes?

$$H(T) = Acos(BX + C)$$
$$P = 10$$
$$A = 12.5$$
$$M = 13.5$$
$$H(T) = 12.5cos(2pi/10(T)) + 13.5$$
$$H(5) = 12.5cos(2pi/10(5)) + 13.5$$
$$H(5) = 26M$$

Summary:This problem was a little tricky but overall I did good. The only mistake I made was I forgot to add one to the mid line because it starts one meter off the ground but after checking my answer in the manual and seeing it didn't add up I saw my mistake and changed everything accordingly.

Page 419 Question 5
Find period and horizontal shift for each function

$$F(X) = 2tan(4x - 32)$$
$$P = pi/B = pi/4$$
$$HS = -c/b = -(32/4) = 8$$

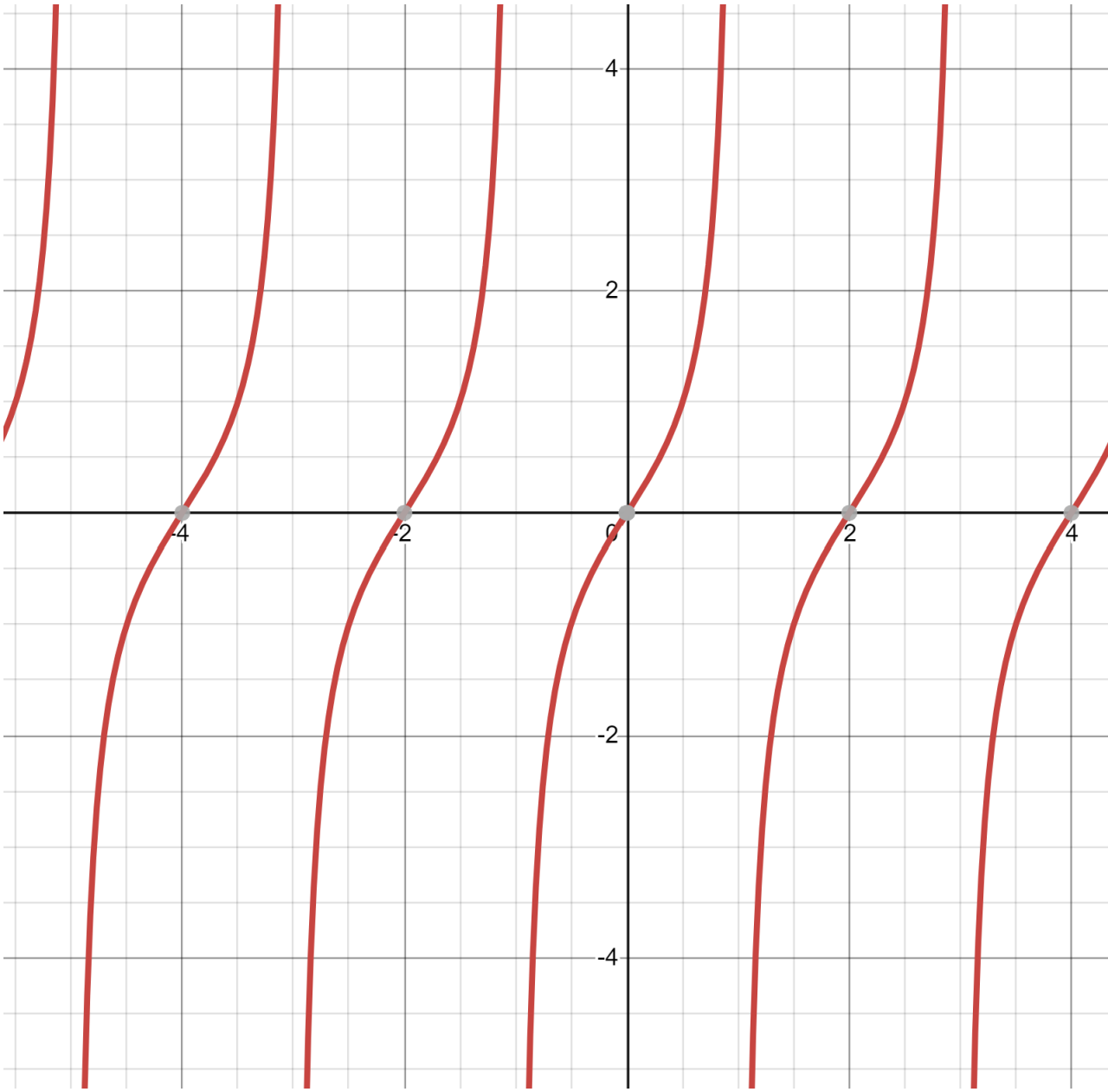
Summary: This question was not too hard i Just had to change a few steps from the other questions to make it work for tangent

Page 419 Question 7
Find period and horizontal shift for each function

$$H(X) = 2sec(pi/4(X + 1))$$
$$P = 2pi/pi/4 = 8$$
$$HS = c/b = 1/1 = 1$$

Summary:This problem wasn't too bad either just a few minor changes I had to make for the change in functions.

Page 420 Question 15
Sketch a graph for $J(X) = tan(pi/2(X))$



Summary: This question was easy because all I had to do was graph the function.

Page 421 question 21

if tanx=-1.5 find tan-x

$$tan(-x) = 1.5$$

Summary: This problem was very easy because all I had to was find the opposite of the number given.

Page 421 Question 23
if sec(x)=2 find Sec(-x)

$$Sec(-x) = -2$$

Summary:this problem was also very easy i am good at finding the opposite of the given number.

Page 421 Question 27 Simplify the expression $cot(-x)cos(-x) + sin(-x)$

$(-cotX)(cosX) - sinX = (-cosX/sinX)(cosX) - sinX = -cos^2X/sinX - sinX = -(cos^2X + sin^2X)/sinX =$

Summary: This question was a little tricky but after working through it I feel I have a good understanding of how to do these types of problems.

Page 429 Question 1
Evaluate the following expressions, giving the answer in radians

$$sin^-1(SQRT(2)/2)$$

$$Sin^-1 = pi/4$$

Summary:This problem wasnt hard but it was a new way fo looking at it so it was a little different.

Page 429 Question 3
Evaluate the following expressions, giving the answer in radians.

$$sin^-1(-1/2)$$

$$sin^-1(-pi/6)$$

Summary: Same as last one it was not too hard but the concept of inverse trig functions is new so it takes some getting used to

Page 429 question 19 evaluate the expression

$$sin^{-}1(cos(pi/4)$$

$$sin^{-}1(SQRT(2)/2)$$

$$sin^{-}1(pi/4)$$

Summary: This question was a little tricky just because it added an extra step but I got it once I realized how you just have to simplify the cos and then it was easy.

Page 429 Question 21 Evaluate the expression

$$sin^{-}1(cos(4pi/3))$$

$$sin^{-}1(1/2)$$

$$sin^{-}1(-pi/6)$$

This question was very similar to the last one and did not have too much trouble with it.

Page 440 question 1 find all the solutions for $0 < \theta < 2pi$

$$2sin(\theta) = -SQRT(2)$$

$$sin(\theta) = -SQRT((2)/2)\theta = 5pi/4 + 2kpi$$

$$\theta = pi - pi/4 + 2kpi = 7pi + 2kpi$$

$$\theta = 5pi/4$$

$$\theta = 7pi/4$$

Summary: This question was a little bit harder because it involved a little bit of everything we have done the unit which was all new.

Page 440 question 3 find all the solutions for $0 < \theta < 2pi$

$$2cos(\theta) = 1$$

$$Cos(\theta) = 1/2$$

$$\theta = pi/3 + 2kpi$$

$$\theta = 5pi/3 + 2kpi$$

$$\theta = pi/3$$

$$\theta = 5pi/3$$

Summary: This was still a little tricky but I got there just following the same steps as the last question.

Page 440 question 9 find all solutions

$$2cos(\theta) = SQRT(2)$$

$$cos(\theta) = SQRT(2)/2$$

$$\theta = pi/4$$

$$\theta = 7pi/4$$

Summary: This problem was very similar to the last set so I did not have much trouble with it.

Page 440 question 11 Find all solutions

$$2sin(\theta) = -1$$

$$sin(\theta) = 1/2$$

$$\theta = 7pi/6$$

$$\theta = 11pi/6$$

Summary: This question was not too bad very similar to the ones I did earlier.

Page 440 question 13 Find all solutions

$$2sin(3\theta) = 1$$

$$sin(3\theta) = 1/2$$

$$3\theta = pi/6$$

$$3\theta = 5pi/6$$

$$\theta = pi/18$$

$$\theta = 5pi/18$$

Summary: This problem was the same as the last step except now I had to divide the coefficient in front of the theta.

Page 440 Question 15 find all solutions

$$2sin(3\theta) = -SQRT(2)$$

$$sin(3\theta) = SQRT(2)/2$$

$$\theta = 5pi/12$$

$$\theta = 7pi/12$$

Summary: This question was not too hard and I am used to these types of problems now.

Page 440 Question 33 Find the first two positive solutions

$$7sin(6X) = 2$$

$$sin(6X = 2/7$$

$$6X = sin^{-}1(2/7)$$

$$6x = 0.28975 + 2kpi$$

$$6X = pi - 0.28975 = 2.85184$$

$$6x = 0.28975 + kpi$$

$$6x = pi - 0.28975 = 2.8975$$

$$x = 0.04829$$

$$x = 0.47531$$

Summary: This question was a little tricky but I got it pretty fast after thinking about it.

Page 440 Question 35 Find the first two positive solutions

$$5cos(3X) = -3/5$$

$$cos(3X = -3/5$$

$$3X = cos^{-}1(-3/5)$$

$$3x = 2.2143 + 2kpi$$

$$3X = 2pi - 0.2143 = 2.85184$$

$$x = 0.7381$$

$$x = 1.3563$$

Summary: This question was the same as the last one and I did not struggle with it.

Page 448 Question 7 Outside temperature over the course of a day can be modeled as a sinusoidal function. Suppose you know the high temperature for the day is 63 degrees and the low temperature of 37 degrees occurs at 5 AM. Assuming t is the number of hours since midnight, find an equation for the temperature, D, in terms of t

$$a = (63 - 37)/2 = 13$$

$$m = 63 + 27/2 = 50$$

$$HSF = 2pi/24 = pi/12$$

$$HS = -5$$

$$D(T) = -13cos(pi/12(t - 5)) + 50$$

Summary: This problem was a little harder because it working through the process backwards which makes it a little confusing

Page 448 Question 9 A population of rabbits oscillates 25 above and below an average of 129 during the year, hitting the lowest value in January (t = 0). a.

Find an equation for the population, P, in terms of the months since January, t.
b. What if the lowest value of the rabbit population occurred in April instead?

$$M = 129$$

$$a = 25$$

$$HSF = 2pi/24 = pi/12$$

$$-25cos(pi/6(t)) + 129$$

$$-25cos(pi/6(t-3)) + 129$$

Summary:This question was easier than the other one because now I know what do and how to approach these problems.

Page 449 Question 11 Outside temperature over the course of a day can be modeled as a sinusoidal function. Suppose you know the high temperature of 105 degrees occurs at 5 PM and the average temperature for the day is 85 degrees. Find the temperature, to the nearest degree, at 9 AM

$$m = 85$$

$$HSF = 2pi/24 = pi/12$$

$$HS = -17$$

$$D(T) = 20cos(pi/12(t-17)) + 85$$

$$t = 75$$

Summary:I did not have too much trouble with this problem after doing the other ones.