Math Assignment 5

aturcotte2

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1 Unit 5

Page 343 question 1 find the distance between the two points (5,3) and (-1,-5)

$$SQRT((X1 - X2) + (Y1 - Y2))$$

$$SQRT((5+1)^2 + (3+5)^2)$$

$$SQRT(36) + (64)$$

$$SQRT(100)$$

$$10$$

the distance is 3.74

Summary: I did not have any trouble and I remembered the formula from last year so it was easy.

Page 343 Question 3 write an equation for a circle centered around (8,-10) and has a radius of 8

$$8^2 = (X - 8)^2 + (Y + 10)^2$$

Summary: This problem was easy, we did almost the same thing in unit two so it was review.

Page 343 Question 5 Write the formula for a circle where the circle is centered at (7,-2) and passes through (-10,0)

$$(X1 + X2/2), (Y1 + Y2/2)$$

$$SQRT((X2 - X1)^2 + (Y2 - Y1)^2)$$

$$SQRT((-10-7)^2+(0+2)^2)$$

$$SQRT((-17)^2+(2)^2)$$

$$SQRT(289+4)$$

$$SQRT(293)$$

$$17.1$$

$$(X-7)^2+(Y+2)^2=17.1^2$$

Summary: I did not have too much trouble but it was a bit more involved than the last questions.

Page 343 Question 7 Write an equation for a circle where the points(2,6) and (8,10) are in diameter

$$((X1+X2/2),(Y1+Y2/2))$$

$$((2+8/2),(6+10/2))$$

$$(5,8)$$

the center is at (5,8)

$$SQRT((X2-X1)^2+(Y2-Y1)^2)$$

$$SQRT((8-2)^2+(10-6)^2)$$

$$SQRT((36)+(16))$$

$$SQRT(52)$$

$$7.2$$

$$7.2/2$$

$$3.6$$

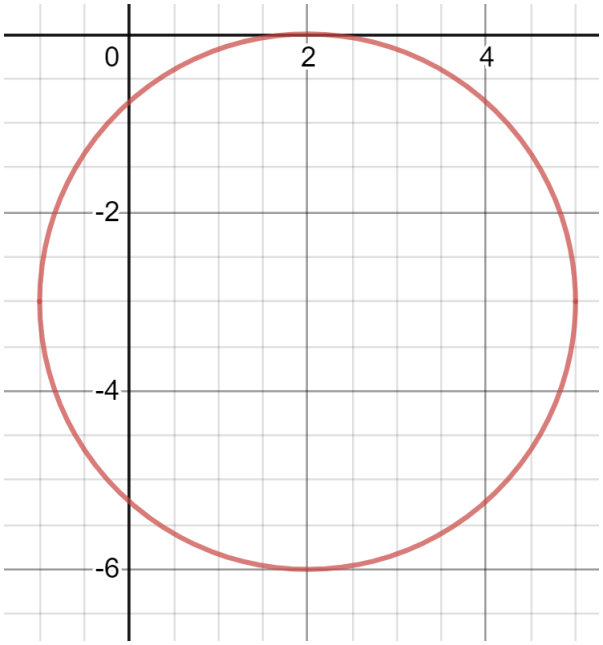
the radius is 3.6

$$(x-5)+(Y-8)=3.6^2$$

Summary: This was not too bad, it took an extra step to find the radius but i did it by using the midpoint formula with the two points that are in diameter.

Page 343 question 9 sketch a graph for the following

$$(X-2)^2+(Y+3)^2=9$$



Summary: This problem was not difficult because in the past few problems I had a lot of practice graphing circles and how they are transformed.

Page 343 Question 11 find the intercepts for a circle with the center at (2,3) with a radius of 3

$$(X-2)^2+(Y+3)^2=9$$
$$(-2)^2+(Y+3)=9$$
$$4+(Y+3)^2=9$$
$$(Y-3)^2=5$$
$$0,3+or-SQRT5$$

the intercepts are (0,3+SQRT5) and (0,3-SQRT5)

Summary: I did not have trouble with this, it was just an extra step at the end of the problem.

Page 343 Question 13 at which point in the first quadrant does the line $y = 2x + 5$ intersect with a circle with the center at (0,5) with a radius of 3

$$(X - 0)^2 + (Y - 5)^2 = 9$$

$$X^2 + (Y - 5)^2 = 9$$

$$X^2 + ((2X + 5) - 5)^2 = 9$$

$$X^2 + (2X)^2 = 9$$

$$5X^2 = 9$$

$$X^2 + 9/5$$

$$X = SQRT9/5$$

$$(SQRT9/5, 2SQRT9/5 + 5)$$

Summary: I did not have a ton of trouble but it was tricky to try and figure out how to start but eventually I got it.

Page 343 question 17 A small radio transmitter broadcasts in a 53 mile radius. If you drive along a straight line from a city 70 miles north of the transmitter to a second city 74 miles east of the transmitter, during how much of the drive will you pick up a signal from the transmitter?

$$Y = -35/37(X - 74)$$

$$Y = -35/37 + 70$$

$$Y = -0.945946X + 70$$

$$X^2 + 0.894814X^2 - 132.43244X + 4900 = 2809$$

$$1894814X^2 - 132.43244X + 2091 = 0$$

$$X = 132.43244 + or - SQRT((-132.43244)^2 - 4(1894814 * 2091))/3789628$$

$$X = 24.0977$$

$$X = 45.7944$$

$$D = SQRT((45.7944 - 24.0977)^2 + (26.6810 - 47.2044)^2)$$

$$D = 29.87$$

Summary: This problem was hard. There was a lot of steps and the numbers were crazy but once i got going it got easier.

Page 359 Question 5 convert 5pi/6 in degrees

$$(5pi)/6 * 180/pi$$

$$5/6 * 180/1$$

$$150$$

the angle is 150 degrees

Summary: After reading the lesson in the book i felt i had a pretty good grasp on this problem and didn't have any trouble.

Page 359 Question 11 Find the angle between 0 and 2pi that is coterminal with 26pi/9

$$26pi/9 - 18pi/9$$

$$8pi/9$$

Summary: I did not have any trouble with this problem.

Page 359 question 15 on a circle of radius 7 miles find the arc length that subtends a central angle of 5 radians.

$$7 * 5 = 35$$

it is 35 miles

Summary: This problem was easy the book explained it well so i knew exactly what to do

Page 360 question 25 A truck with 32-in.-diameter wheels is traveling at 60 mi/h. Find the angular speed of the wheels in rad/min. How many revolutions per minute do the wheels make?

$$60mph = 63360in/s$$

$$63360/16 = 3960$$

$$3960/2pi = 630.25$$

630.25 rpm

Summary: I did not have much trouble with this problem.

Page 360 question 27 A wheel of radius 8 in. is rotating 15°/sec. What is the linear speed v, the angular speed in RPM, and the angular speed in rad/sec?

$$V = (pi/12)(8)$$

$$2.094$$

$$(2.094 * 60)/2pi$$

$$2.5$$

2.5 rpm

Summary: I did not have too much trouble and it was simple, just following steps.

Page 373 question 1 . Find the quadrant in which the terminal point determined by t lies if a. sin(T)¡0 and cos(T¿0) b. sin(T)¿0 and cos(T)¿0

(A) Quadrant three because sine is negative is quadrants 3 and 4 but cosine is negative in 2 and 3 leaving 3 to be the only option. (B) Quadrant 2 because sine is positive is 1 and 2 and cosine is negative in 2 and 3

Summary: This problem was not hard after reading the chapter.

Page 373 question 3 what is the point on the circle if P is 3/5 and p is in quadrant 2, find the x coordinate

$$SIN^2 = 9/25$$

$$cos^2 = 25/25$$

$$sin - cos = 16/25$$

$$cos^2 = +or - 4/5$$

$$(4/5, 0)$$

Summary: This question was not too bead but was still harder than the last question.

Page 373 question 5 if cos=1/7 and it is in the 4rth quadrant, find sin

$$sin^2 + cos^2 = 1$$

$$sin^2 + 1/49 == 1$$

$$sin^2 = SQRT(48)/7$$

$$sin = +or - 4SQRT(3)/7$$

$$sin = -4SQRT(3)/7$$

Summary: This problem wasn't too bad and was just reworking the equation.

page 373 question 7 is sin=3/8 and is in second quadrant find cosine

$$SIN3/8$$

$$sin^2 + cos^2 = 1$$

$$9/64 + cos^2 = 1$$

$$cos^2 = 55/64$$

$$cos = +or - SQRT(55)/8$$

$$cos = -SQRT(55)/8$$

Summary: This problem was similar to the last one and wasnt too hard, just reworking the Pythagorean theorem

Page 373 question 11 for each angle find the reference angle and which quadrant the angle lies in the find the sin and cos of the angle (A)5pi/4 (B)7pi/6 (C) 5pi/3 (D) 3pi/4
$5pi/4$
$pi/4$
it is in quadrant 3
$Sin(5pi/4) = -sin(pi/4) = -SQRT(2)/2$
$cos(5pi/4) = -cos(pi/4) = -SQRT(2/2)$

$7pi/6$
$pi/6$
it is in quadrant 3
$sin(7pi/6) = -sin(pi/6) = -1/2$
$cos(7pi/6) = -cos(pi/6) = -SQRT(3)/2$

$5pi/3$
$pi/3$
It is in Quadrant 4
$sin = (5pi/3) = sin(pi/3) = -SQRT(3)/2$
$cos(5pi/3) = cos(pi/3) = -SQRT(2)/2$

$3pi/4$
$pi/4$
It is in quadrant 2
$sin(3pi/4) = sin(pi/4) = SQRT(2)/2$
$cos(3pi/4) = cos(pi/4) = -SQRT(2)/2$

Summary: This problem was not the hardest it just took a good amount of time to do all the steps for all the problems.

Page 374 Question 13 give the exact sine and cosine values for each of the angles (A) -3pi/4 (B) 23pi/6 (C) -pi/2 (D) 5pi
$-3pi/4$
$sin(-3pi/4) = -sin(pi/4) = -SQRT(2)/2$
$cos(-3pi) = -cos(pi/4) = -SQRT(2)/2$

$23pi/6$
$23pi/6 = 12pi/6 + 11pi/6 = 2pi + 11pi/6$
$11pi/6 = 2pi - pi/6$ $pi/6$
$11pi/6$
$sin(23pi/6) = -sin(pi/6) = -1/2$
$cos(23pi/6) = cos(pi/6) = SQRT(3)/2$

$-pi/2$
$sin(-pi/2) = y/1 = -1$
$cos(-pi/2) = x/1 = 0$

$5pi = 4pi + pi = (2pi + pi)$
$sin(5pi) = sin(pi) = 0$
$cos(5pi) = cos(pi) = -1$

Summary: This problem was a little bit harder because it had harder angles and also took a long time.

Page 382 question 1 if $\theta = pi/4$ find the exact values for sec csc tan and cot
$sec(pi/4) = 1/cos(pi/4) = 1/SQRT(2)/2 = 2/SQRT(2) = SQRT(2)$
$csc(pi/4) = 1/sin(pi/4) = 1/SQRT(2)/2 = 2/SQRT(2) = SQRT(2)$
$tan(pi/4) = sin(pi/4)/cos(pi/4) = SQRT(2)/2/SQRT(2)/2 = 1$
$cot(pi/4) = 1/tan(pi/4) = 1$

Summary: This problem was tricky because I ahev never seen a lot of those terms before.

Page 382 Question 9 if $sin\theta = 3/4$ and is on quadrant 2 find cos sec csc tan cot
$cos = -SQRT(1 - sin^2(\theta)) = -SQRT(1 - (3/4)^2) = -SQRT(7)/4$
$sec = 1/cos = 1//SQRT(7)/4 = 7/-3SQRT(7) = -4SQRT(7)/4$
$csc = 1/sin = 1/3/4 = 4/3$
$tan = sin/cos = (3/4)/(-SQRT(7)/4 = -3SQRT(7)/7$
$cot = 1/tan/1/-3SQRT(7)/4 = 7/-3SQRT(7) = -SQRT(7)/3$

Summary: This problem was also a little tricky but I am getting the hang of these new terms

Page 383 question 17 Simplify ech of the following to an expression involving a single trig function with no fractions

$$csc(t)tan(t)$$

$$1/sin(t) * sin(t)/cos(T) = 1/cos(t) = sec(t)$$

Summary: This problem was not too hard especially after all the practice in the last two problems

Page 384 question 27 prove the identity

$$(sin^2(\theta))/(1 + cos(\theta)) = 1 - cos(\theta)$$

$$(sin^2(\theta))/(1+cos(\theta)) = (1-cos^2(\theta))/1+cos(\theta)$$

$$(1+cos(\theta))(1-cos(\theta))/(1+cos(\theta))$$

$$1-cos(\theta)$$

Summary: This was the hardest so far and I had to watch a few videos and re read the chapter and check my answer in the manual to make sure I got it right but eventually I did end up getting it correct.

Page 391 Question 1 in each of the triangles find sin cos tan sec csc cot Leg 1= 10 leg 2=8 angle a is inbetween hypotnuse and leg 2

$$10^2 + 8^2 = SQRT(164) = 2SQRT(41)$$

$$sin = 8/2SQRT(41) = 5/SQRT(41)$$

$$cos = 8/2SQRT(41) = 4/SQRT(41)$$

$$tan = (5/SQRT(41))/(4/SQRT(41) = 5/4$$

$$sec = 1/SQRT(41) = SQRT(41)/4$$

$$csc = 1/(5/SQRT(41)) = SQRT(41)/5$$

$$cot = 1/(5/4) = 4/5$$

Summary: This problem was easy because I was able just to follow a simple formula and go through the problem

Page 391 question 3 in each of the triangles solve for the following sides leg 1=7 leg 2=b leg 3=c c=hypotenuse angle 2-3=30 angle 1-2=b angle 1-3=90