KING FAHD UNIVERSITY OF PETROLUEM AND MINERALS
Prep-Year Math Program
Math 001 - Term 071

WORKSHEET 2.1, 2.2, 2.3

Question1

Given the equation of a circle $2x^2 + 2y^2 + 8x - 4y + 2 = 0$.

a) Write this equation in the standard form.

b) Find the center and the radius of this circle.

c) Determine whether the circle is tangent to the $x-$axis, $y-$axis or both.

Question2

Identify the equation or the set of ordered pair that define y as a function of x.

a) $\{(2,5),,(-4,3),(-2,5)\}$

b) $|x| + y^3 = 1$

Question3

a) If $f(x) = \dfrac{5x}{|x| - 2}$, then find the domain of $f(x)$.

b) If $g(x) = \begin{cases} x & if \quad x < 1 \\ 3 & if \quad x \geq 1 \end{cases}$, then find the range of $g(x)$.

c) If $h(x) = [x]$, where $[x]$ is the greatest integer of less than or equal to x, then find the value of $h^2(-0.5) + h(\sqrt{8})$.

Question4 If

$$g(x)=\begin{cases}\left[\left[x-\frac{3}{2}\right]\right] & if \quad 0<x<\frac{1}{4}\\ \left|\frac{1}{3}x-1\right| & if \quad x>2\end{cases}$$

Then find the value of $2g\left(\frac{1}{8}\right)+g(4)$

Question 5 If the point $(2,b)$ lies on the line that is perpendicular to $y-2x-1=0$ and passes through $(1,3)$. Find the value of b.

Question 6 Find the $y-\text{int}ercept$ of the line that passes through $\left(\frac{3}{4},0\right)$ and $\left(\frac{1}{8},-\frac{1}{2}\right)$.

Question 7 If $f(x)=\begin{cases}1 & if \quad x<0\\ 2-x & if \quad 2\le x<4\end{cases}$, then find the range of $f(x)$.

Question 8 Find the $x-and$ $y-$intercepts of

$$f(x)=\begin{cases}3-2x & if \quad x\le 1\\ x-2 & if \quad x>1\end{cases}$$

Question 9 $(-2,20)$ is the midpoint of the line segment joining (a,b) and $\left(-\frac{a}{2},\frac{2b}{3}\right)$, Then find the value of $a \ and \ b$

Question 10 If the point (a,b) lies in the fourth quadrant, then $(b,-a)$ lies in which quadrant?

Question 11 Given

$$f(x)=\begin{cases}\sqrt{(1-5x)^2} & if \quad x<2\\ [2x+1] & if \quad x\geq 2\end{cases}$$

Then find the value of $f(\pi)+f(1)$

Question 12 If the distance between (x,y) and $(1,1)$ is the same as the distance between (x,y) and $(3,3)$, then find the value of $x+y$.

Question 13 Find the domain of the functions:

i. $f(x)=\sqrt{\dfrac{-3+4x-x^2}{x}}$

ii. $f(x)=\sqrt{-x^2-25}$

iii. $f(x)=\dfrac{3}{4x^2+4x+1}$