Name: _____ Class: _____ Date: _____ ID: A

MAT 1313 Unit 3 Review

Answer each of the following:

____ 1. Identify Transformations

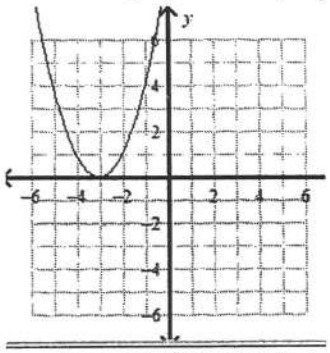
a. $f(x+3)$ c. $f(x)+3$ e. $y=|x+1|-3$

b. $f(x)-3$ d. $f(x-3)$ f. $y=\sqrt{x-2}+3$

____ 2. Given $f(x)=\begin{cases}2x+1 & \text{if } x\geq 3\\ x^2 & \text{if } x<3\end{cases}$

a. $f(-5)$ b. $f(8)$ c. $f(3)$

____ 3. Given the graph below, answer the following questions



a. interval of increasing c. domain/ range

b. interval of decreasing d. f(-3)

____ 4. Given center $(1,-3)$ and $r=5$, answer each of the following about the equation of a circle

a. Write in standard form c. Graph

b. Write in general form d. Is it a function?

____ 5. Given $f(x)=2x+1$

a. Find inverse b. Graph $f(x)$ & $f^{-1}(x)$

____ 6. Given $f(x)=x^2+3x-1$ and $g(x)=2x+5$, answer each of the following:

a. $f(x)+g(x)$ d. $\left(\frac{f}{g}\right)(x)$

b. $(f-g)(x)$ e. $(f\circ g)(x)$

c. $(f+g)(2)$ f. $(g\circ f)(1)$

____ 7. Graph each of the following:

a. $y=3x-1$ b. $f(x)=\sqrt{x+1}-3$ c. $y=|x-3|+2$

____ 8. Given $x^2+y^2+4x-6y-12=0$, answer each of the following:

a. Write in Standard Form c. Radius?

b. Center? d. Graph

Name: key Class: _____ Date: _____ ID: A

MAT 1313 Unit 3 Review

Answer each of the following:

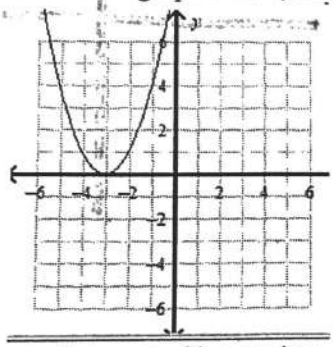
____ 1. Identify Transformations

a. $f(x+3)$ ←3
c. $f(x)+3$ ↑3
e. $y=|x+1|-3$ ←1 ↓3
b. $f(x)-3$ ↓3
d. $f(x-3)$ →3
f. $y=\sqrt{x-2}+3$ →2 ↑3

____ 2. Given $f(x)=\begin{cases}2x+1 & \text{if } x\geq 3\\ x^2 & \text{if } x<3\end{cases}$

a. $f(-5)$
b. $f(8)$
c. $f(3)$

____ 3. Given the graph below, answer the following questions



a. interval of increasing $x>-3$
c. domain/ range D: $(-\infty,\infty)$ R: $[0,\infty)$
b. interval of decreasing $x<-3$
d. $f(-3)=0$

____ 4. Given center $(1,-3)$ and $r=5$, answer each of the following about the equation of a circle

a. Write in standard form
c. Graph
b. Write in general form
d. Is it a function?

____ 5. Given $f(x)=2x+1$

a. Find inverse
b. Graph $f(x)$ & $f^{-1}(x)$

____ 6. Given $f(x)=x^2+3x-1$ and $g(x)=2x+5$, answer each of the following:

a. $f(x)+g(x)$
d. $\left(\frac{f}{g}\right)(x)$
b. $(f-g)(x)$
e. $(f\circ g)(x)$
c. $(f+g)(2)$
f. $(g\circ f)(1)$

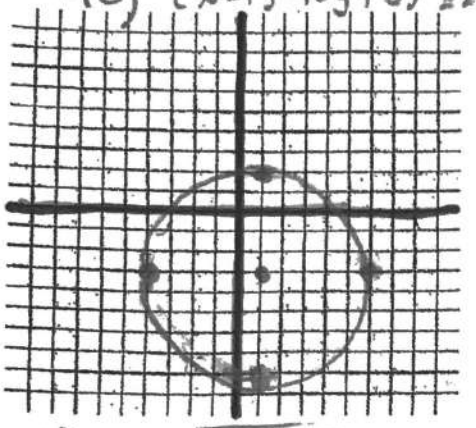
____ 7. Graph each of the following:

a. $y=3x-1$
b. $f(x)=\sqrt{x+1}-3$
c. $y=|x-3|+2$

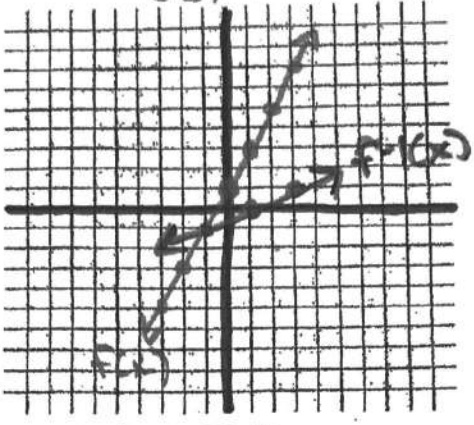
____ 8. Given $x^2+y^2+4x-6y-12=0$, answer each of the following:

a. Write in Standard Form
c. Radius?
b. Center?
d. Graph

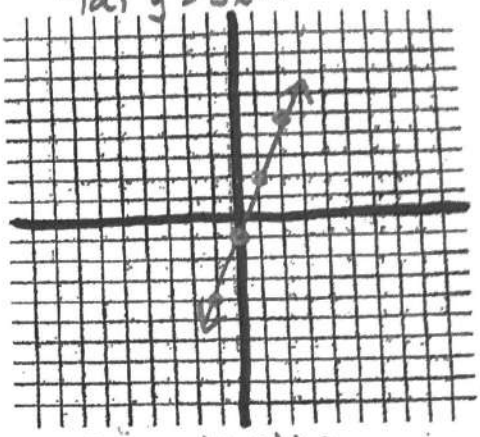
4c) $(x-1)^2+(y+3)^2=25$



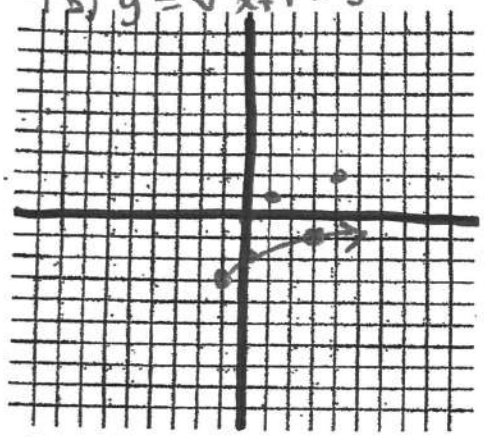
5b) $f(x)=2x+1$

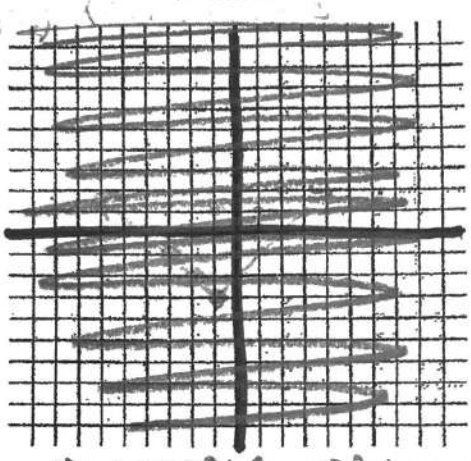


7a) $y=3x-1$

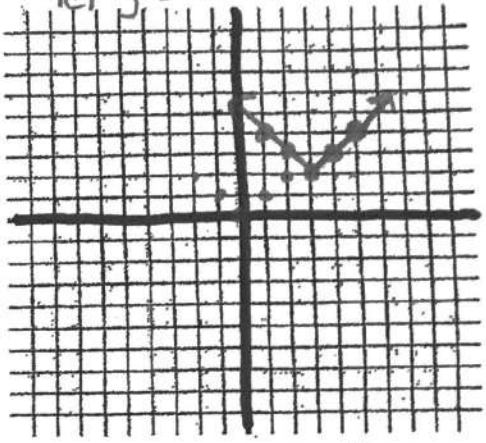


7b) $y=\sqrt{x+1}-3$

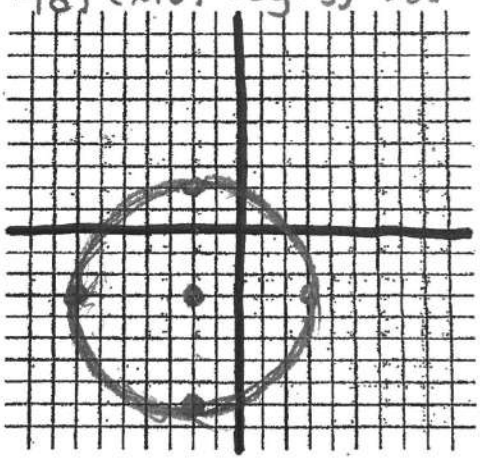


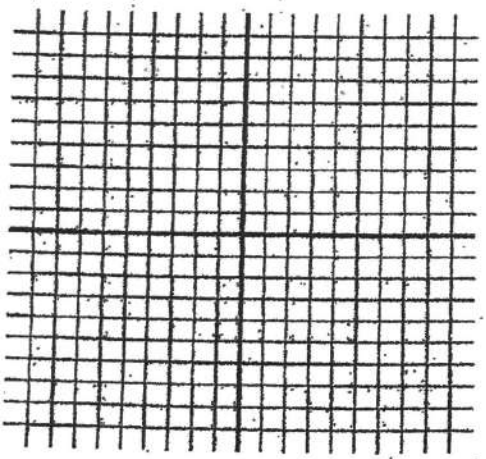


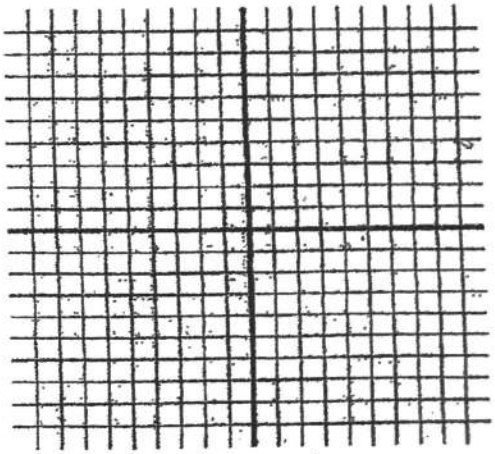
7c) $y=|x-3|+2$

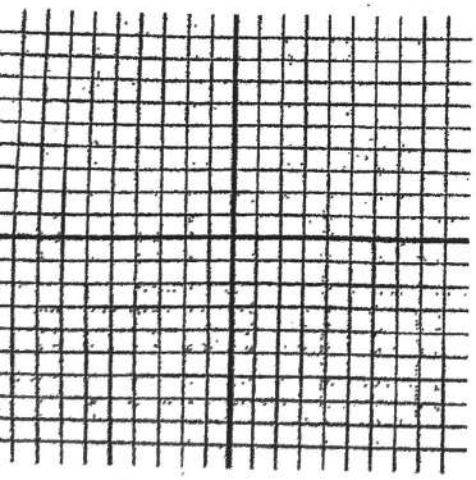


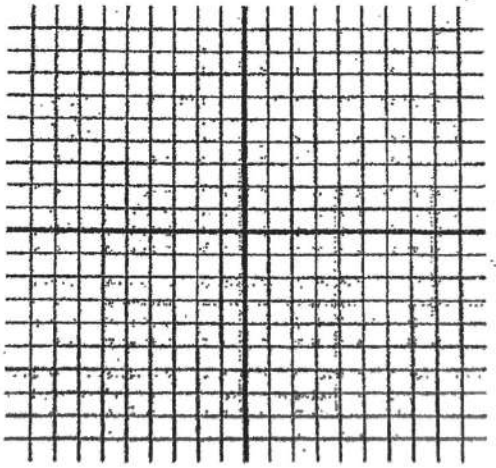
7d) $(x+2)^2+(y-3)^2=25$

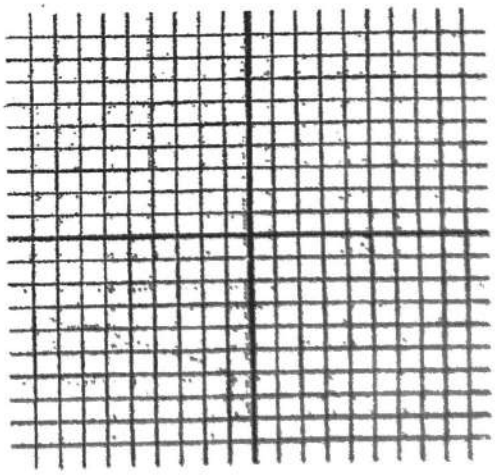












2) $f(-5) = (-5)^2$
$= 25$

2b) $f(8) = 2(8)+1$
$= 16+1$
$= 17$

2c) $f(3) = 2(3)+1$
$= 6+1$
$= 7$

4) center $(1, -3)$ $r = 5$

A) $(x-1)^2 + (y+3)^2 = 5^2$ $\longrightarrow$ standard form $(x-1)^2 + (y+3)^2 = 25$

$x^2 - 2x + 1 + y^2 + 6y + 9 - 25 = 0$

B) $x^2 + y^2 - 2x + 6y - 15 = 0$ $\leftarrow$ General form

D) NO

5) $f(x) = 2x + 1$

$x = 2y + 1$

$x - 1 = 2y$

$\frac{x-1}{2} = y$

$f^{-1}(x) = \frac{x-1}{2}$

6) $f(x) = x^2 + 3x - 1$ $g(x) = 2x + 5$

A) $(f+g)(x) = x^2 + 3x - 1 + 2x + 5$
$= x^2 + 5x + 4$

B) $(f-g)(x) = x^2 + 3x - 1 - (2x + 5)$
$= x^2 + 3x - 1 - 2x - 5$
$= x^2 + x - 6$

6c) $(f+g)(2)$

$(2)^2 + 5(2) + 4$

$4 + 10 + 4$

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6d) $\left(\frac{f}{g}\right)(x) = \frac{x^2 + 3x - 1}{2x + 5}$

6e) $(f \circ g)(x) = (2x+5)^2 + 3(2x+5) - 1$
$= (2x+5)(2x+5) + 6x + 15 - 1$
$= 4x^2 + 20x + 25 + 6x + 14$
$= 4x^2 + 26x + 39$

6f) $(g \circ f)(1)$

$f(1) = (1)^2 + 3(1) - 1$
$= 1 + 3 + 1$
$= 3$

$2(3) + 5$

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8) $x^2+y^2+4x-6y-12=0$

$(x^2+4x+4)+(y^2-6y+9)=12+4+9$

$\frac{4}{2}=2$ $\quad (x+2)^2+(y-3)^2=25$

$2^2=4$

$\frac{-6}{2}=-3$

$(-3)^2=9$

8b) center $(-2,3)$ $\qquad$ 8c) $r=5$