Name Answer key
Ms. Schmidt

Date _____
Intermediate Algebra

Review for Current Unit

Kick off- If $f(x) = 2x + 5$, $g(x) = x - 1$ and $h(x) = x^2 - 2x + 4$ find each of the following:

1) $f(x) + h(x)$

$2x+5 + x^2 - 2x + 4$

$x^2 + 9$

2) $f(x) \cdot g(x)$

$(2x+5)(x-1)$

$2x^2 - 2x + 5x - 5$

$2x^2 + 3x - 5$

3) Subtract $g(x)$ *from* $h(x)$.

$x^2 - 2x + 4 - x + 1$

$x^2 - 3x + 5$

4) $f(g(x))$

$2(x-1) + 5$

$2x - 2 + 5$

$2x + 3$

Domain, Range and Functions

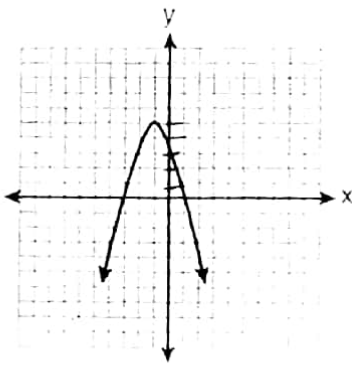
1) Using the relation: {(1,3), (2,5), (3,10), (0,0)} Determine
   a. Domain- 1, 2, 3, 0
   b. Range- 3, 5, 10, 0
   c. Is the relation a function? Why or why not.

yes no x values repeat

2) Using the relation: {(−2,3), (5,3), (1,6), (5,2)} Determine
   a. Domain- -2, 5, 1, 5
   b. Range- 3, 3, 6, 2
   c. Is the relation a function? Why or why not.

NO, the x-value of 5 repeats

3) Determine for the graph:
   a. Domain- $(-\infty, \infty)$
   b. Range- $(-\infty, 5]$



   c. Is the relation a function? Why or why not.

yes! It passes the vertical line test

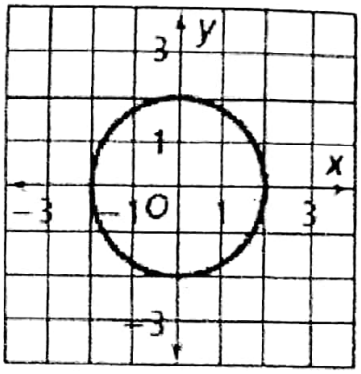
4) Determine for the graph:

a. Domain- $[-2, 2]$

b. Range- $[-2, 2]$

c. Is the relation a function? Why or why not.

NO! It doesn't pass the vertical line test.



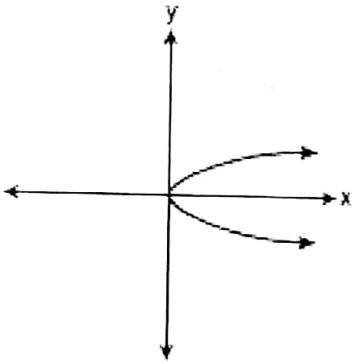
5) Determine for the graph:

a. Domain- $[0, \infty)$

b. Range- $(-\infty, \infty)$

c. Is the relation a function? Why or why not.

NO! It doesn't pass the vertical line test.



Linear Functions

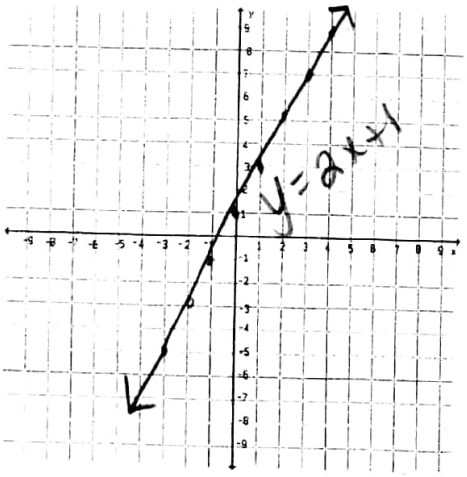
Graph each of the following using slope-intercept form.

6) $y - 2x - 1 = 0$

$+2x+1 \quad +2x+1$

$y = 2x + 1$

$m = 2/1 \quad b = 1$

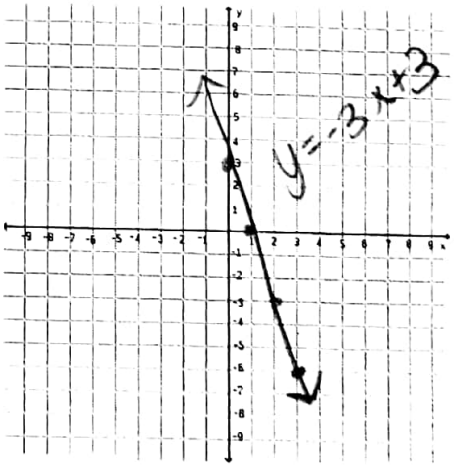


7) $9x + 3y = 9$

$-9x \quad -9x$

$\frac{3y}{3} = \frac{-9x+9}{3}$

$y = -3x + 3$



Axis of Symmetry → $\frac{-b}{2a}$

Quadratic Functions

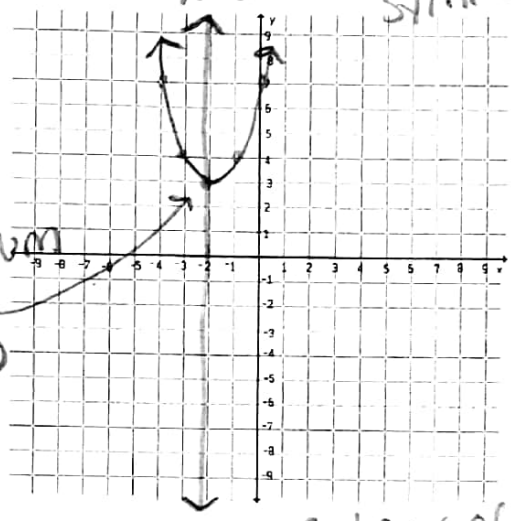
Directions: Graph each quadratic function, label the vertex, roots and state the minimum or maximum.

8) $y = x^2 + 4x + 7$

$x = \frac{-b}{2a} = \frac{-(4)}{2(1)} = -2$

x		y
-4	$(-4)^2+4(-4)+7$	7
-3	$(-3)^2+4(-3)+7$	4
-2	$(-2)^2+4(-2)+7$	3
-1	$(-1)^2+4(-1)+7$	4
0	$(0)^2+4(0)+7$	7

x=-2 (axis of symm)



minimum
Vertex
(-2, 3)

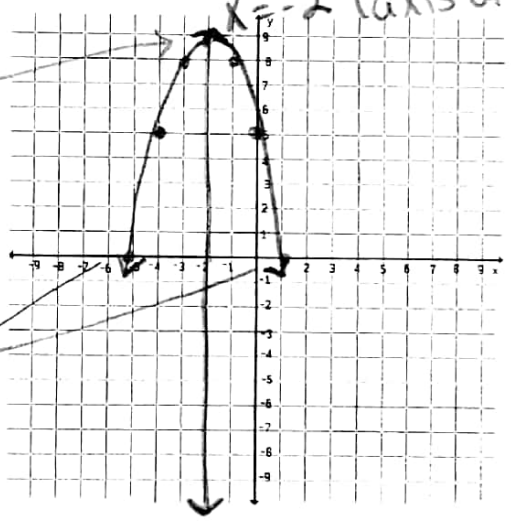
NO roots!

9) $y = -x^2 - 4x + 5$

$x = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = -2$

x		y
-4	$-(-4)^2-4(-4)+5$	5
-3	$-(-3)^2-4(-3)+5$	8
-2	$-(-2)^2-4(-2)+5$	9
-1	$-(-1)^2-4(-1)+5$	8
0	$-(0)^2-4(0)+5$	5
1		0

x=-2 (axis of symm)



maximum
Vertex
(-2, 9)

roots
(-5, 0)
(1, 0)

Translating Functions

Directions: State the transformation for each of the following:

10) $f(x) = (x-4)^2$

right 4

11) $g(x) = x^2 - 7$

down 7

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

left 5
up 1

13) $h(x) = (x-2)^2 - 10$

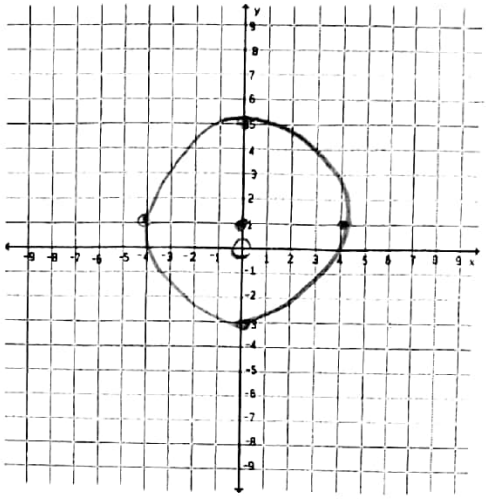
right 2
down 10

Circles

14) Graph the circle $(x)^2 + (y-1)^2 = 16$ State the radius and center.

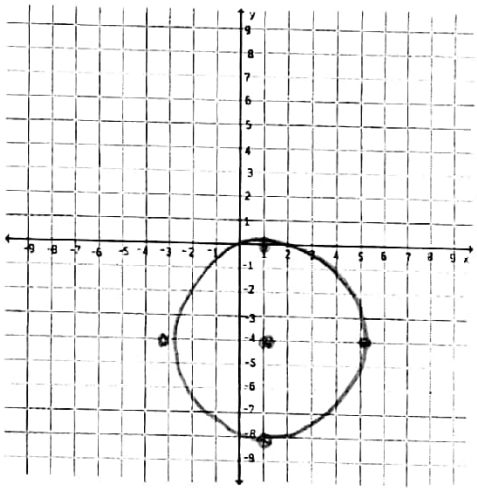
Center $(0, 1)$

$r = \sqrt{16} = 4$



15) A circle whose center is $(1, -4)$ and has a radius of 4. Write the equation of the circle.

$(x-1)^2 + (y+4)^2 = 16$



16) Write the equation of a circle whose center is (0,0) and has a point $(0, -7)$ on the edge of the circle.

$(x+0)^2 + (y+0)^2 = 49$

$(0+0)^2 + (-7+0)^2 = 49$

17) Write the equation of a circle whose center is $(4, -3)$ and has a point $(-1, -3)$ on the circle.

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

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

18) Write the equation of the circle in standard form. $x^2 - 2x + y^2 + 28y + 181 = 0$

$-181 \quad -181$

$x^2 - 2x + y^2 + 28y = -181$

$+1$

$+196$

$(x-1)^2 + (y-14)^2 = 16$

Center $(1, 14)$

radius $= \sqrt{16} = 4$

19) Write the equation of the circle in standard form. $x^2 + y^2 - 2x + 24y + 120 = 0$

$x^2 - 2x + y^2 + 24y + 120 = 0$

$x^2 - 2x + y^2 + 24y = -120$

$+1$

$+144$

$(x-1)^2 + (y+12)^2 = 25$

Center $(1, -12)$

$r = \sqrt{25} = 5$

20) Write the equation of the circle in standard form. $x^2 + 26x + y^2 + 28y + 364 = 0$

$-364 \quad -364$

$x^2 + 26x + y^2 + 28y = -364$

$+169$

$+196$

$(x+13)^2 + (y+14)^2 = 1$

Center $(-13, -14)$

$r = \sqrt{1} = 1$