Name Answer Key
Ms. Schmidt

Date _____
Intermediate Algebra

Review for Past Units

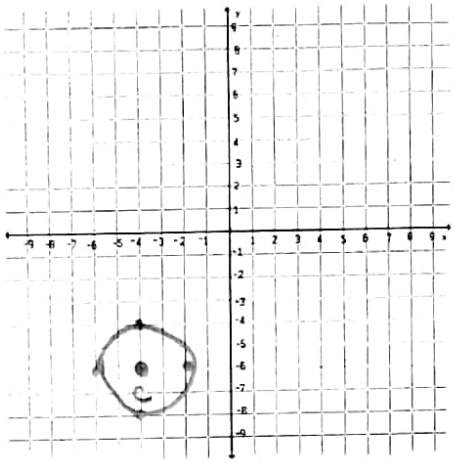
Kick off-

1) Write the equation of the circle whose center is (-4, -6) and has a point (-2, -6) on the circle.

$(x+4)^2 + (y+6)^2 = 4$

$(-2+4)^2 + (-6+6)^2 = 4$

2) Graph the equations to number 1!



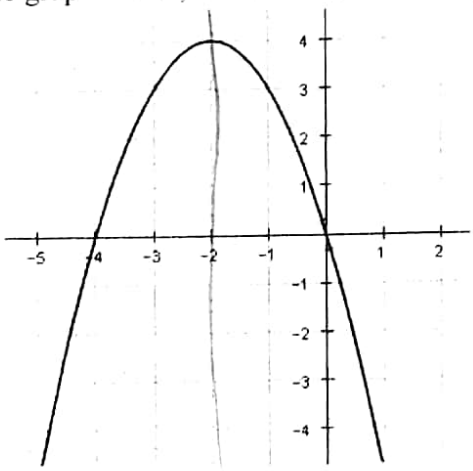
C → (-4, -6)

$r = \sqrt{4} = 2$

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

$x^2 - 2x + y^2 + 24y + 120 = 0$
$\quad -120 \quad -120$
$x^2 - 2x + y^2 + 24y = -120$
$\quad +1 \quad +144$
$(x-1)^2 + (y+12)^2 = 25$

4) Using the graph below, determine the following:



A) The axis of symmetry

$x = -2$

B) State the maximum point

(-2, 4)

C) The roots of the equation.

(-4, 0) + (0, 0)

Operations with Polynomials

Given: $f(x) = 3x - 1$, $g(x) = x - 9$, $k(x) = x^2 - 4x + 4$, $m(x) = 3x^2 + 8x + 5$ find each of the following.

1) $f(x) + k(x)$

$3x-1+x^2-4x+4$

x^2-x+3

2) Subtract $f(x)$ from $m(x)$ (1st)

$(3x^2+8x+5)-(3x-1)$

$3x^2+8x+5-3x+1$

$3x^2+5x+6$

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

$(3x-1)(x-9)$

$3x^2-27x-x+9$

$3x^2-28x+9$

4) $m(x) - k(x)$

$(3x^2+8x+5)-(x^2-4x+4)$

$3x^2+8x+5-x^2+4x-4$

$2x^2+12x+1$

5) Subtract $g(x)$ from $k(x)$ (1st)

$(x^2-4x+4)-(x-9)$

$x^2-4x+4-x+9$

$x^2-5x+13$

6) $m(x) + g(x)$

$(3x^2+8x+5)+(x-9)$

$3x^2+9x-4$

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

$(x-9)(3x-1)$

$3x^2-x-27x+9$

$3x^2-28x+9$

8) Subtract $k(x)$ from $m(x)$ (1st)

$(3x^2+8x+5)-(x^2-4x+4)$

$3x^2+8x+5-x^2+4x-4$

$2x^2+12x+1$

Given If $f(x) = x - 4$, $g(x) = 4x + 8$, $k(x) = 2x - 1$, $m(x) = 3x + 6$ find each of the following:

9) $g(f(2))$

$f(2) = 2 - 4 = -2$

$g(-2) = 4(-2) + 8 = \boxed{0}$

10) $g(f(x))$

$4(x-4)+8$

$4x - 16 + 8$

$4x - 8$

11) $k(m(-4))$

$m(-4) = 3(-4) + 6 = -6$

$K(-6) = 2(-6) - 1 = (-13)$

12) $k(m(x))$

$2(3x+6) - 1$

$6x + 12 - 1$

$6x + 11$

13) $k(f(3))$

$f(3) = 3 - 4 = -1$

$K(-1) = 2(-1) - 1 = (-3)$

14) $k(f(x))$

$2(x-4) - 1$

$2x - 8 - 1$

$2x - 9$

15) $m(g(0))$

$g(0) = 4(0) + 8 = 8$

$m(8) = 3(8) + 6 = (30)$

16) $m(g(x))$

$3(4x+8) + 6$

$12x + 24 + 6$

$12x + 30$

Systems of Equations

17) Is (-3, -6) a solution of the system of equations: $-4x + y = 6$

$-5x - y = 21$

$-4(-3) + (-6) = 6$

$6 = 6$ ✓

$-5(-3) - (-6) = 21$

$21 = 21$ ✓

yes!

18) Is (1, -2) a solutions of the system of equations: $-5x + y = -2$

$-3x + 6y = -12$

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

$-7 \neq -2$

NO!

19) Is (3, -4) a solution of the system of equations: $-7x - 2y = -13$

$x - 2y = 11$

$-7(3) - 2(-4) = -13$

$-13 = -13$

✓

$(3) - 2(-4) = 11$

$11 = 11$

✓

yes!

20) Is (-5, 4) a solution of the system of equations: . $2x - 3y = -1$

$y = x - 1$

$2(-5) - 3(4) = 1$

$-22 \neq 1$

NO!

Solving Equations

21) Solve and check: $2x - 5 + 7x = 11 - 3x + 4x$

$9x - 5 = 11 + x$

$-x \quad\quad -x$

$8x - 5 = 11$

$+5 \quad +5$

$\frac{8x}{8} = \frac{16}{8}$

$x = 2$

Check

$2(2) - 5 + 7(2) = 11 - 3(2) + 4(2)$

$13 = 13$ ✓

22) Solve and Check: $-2(1 - 7y) = 8(y - 7)$

$-2 + 14y = 8y - 56$

$-8y \quad -8y$

$-2 + 6y = -56$

$+2 \quad\quad +2$

$\frac{6y}{6} = \frac{-54}{6}$

$y = -9$

Check

$-2(1 - 7(-9)) = 8(-9 - 7)$

$-128 = -128$ ✓

23) Solve and check: $8x + 16x - 12 = 24x - 16 + 4$ ✓ ✓

$24x - 12 = 24x - 12$

$-24x \quad\quad -24x$

$-12 = -12$

Many solutions!

24) Solve and check: $5(2x + 6) = -4(-5 - 2x) + 3x$

$10x + 30 = 20 + 8x + 3x$

$10x + 30 = 20 + 11x$

$-10x \quad\quad -10x$

$30 = 20 + x$

$-20 \quad -20$

$10 = x$

Check

$5(2(10) + 6) = -4(-5 - 2(10)) + 3(10)$

$130 = 130$ ✓