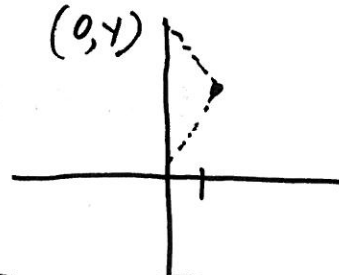Name: _Key_

Date: _____ Period: _____

1. Find the midpoint of the segment AB between the points A(6,10) and B(6,-4).

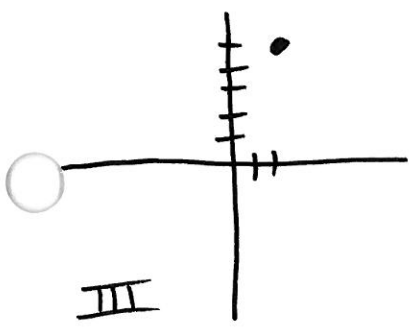$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right) = \frac{6+6}{2}, \frac{10+-4}{2} = (6,3)$$

2. Find the points on the y-axis that are 4 units from P(1,9).

$(0,y)$

$$4 = \sqrt{(0-1)^2 + (y-9)^2}$$

$$16 = 1 + y^2 - 18y + 81$$

$$0 = y^2 - 18y + 66$$

$$y = 12.87, \quad y = 5.13 \quad (0,12.87) \quad (0,5.13)$$

3. Find the point with coordinates of the form (2a,a) that is in the third quadrant and is a distance 9 from P(2,5).

$$(9)^2 = \sqrt{(2a-2)^2 + (a-5)^2}^2$$

$$81 = 4a^2 - 8a + 4 + a^2 - 10a + 25 \qquad (-3.79, -1.89)$$

$$0 = 5a^2 - 18a - 52$$

$$a = 5.49 \text{ or } a = -1.89 \qquad 2a = -3.79$$

III

4. Find the center and radius of the circle.

$x^2 + y^2 + 16x - 18y + 96 = 0.$

$$x^2 + 16x + \underline{64} + y^2 - 18y + \underline{81} = -96 + \underline{64} + \underline{81}$$

$$(x+8)^2 + (y-9)^2 = 49$$

$$c(-8,9); \ r=7$$

5. Determine whether f is even, odd, or neither.

$f(x) = 5x^5 - 3x^4$ \qquad neither

6. Find the slope between the points A(-3,6) and B(7,-2). $M = \frac{-2-6}{7-(-3)} = \frac{-8}{10} = \frac{-4}{5}$

7. Find the slope-intercept form of the line with the x-intercept 13 and y-intercept -10.
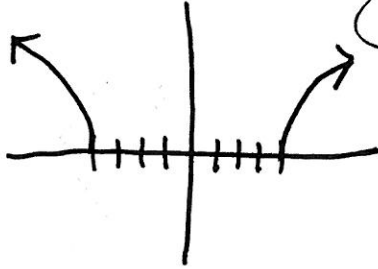
$(13,0)$ $(0,-10)$

$$y = mx + b$$
$$y = mx - 10$$
$$0 = 13m - 10$$
$$m = \frac{10}{13}$$

$$y = \frac{10}{13}x - 10$$

8. Find the domain of f.

$f(x) = \sqrt{x^2 - 16}$.

$x \leq -4$ or $x \geq 4$

9. Find the distance between the points A(-3,4) and B(7,5).

$$d = \sqrt{(7-(-3))^2 + (5-4)^2}$$
$$= \sqrt{10^2 + 1^2} = \sqrt{101} \approx 10.05$$

10. Find the equation of the upper half of the circle.

$(x-3)^2 + (y+4)^2 = 31$

$$\sqrt{(y+4)^2} = \sqrt{31 - (x-3)^2}$$
$$y + 4 = \pm\sqrt{31 - (x-3)^2}$$
$$y = -4 + \sqrt{31 - (x-3)^2}$$

11. Find f(a) if $f(x) = 3x^2 - 2x + 1$.

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