

# HOMWORK: CIRCLES

Distance &  
Midpt  
Formulas

NAME: \_\_\_\_\_

DAY 1 DUE: \_\_\_\_\_

Write the standard form of the equation of the circle described.

1. C(2, -7) r = 3

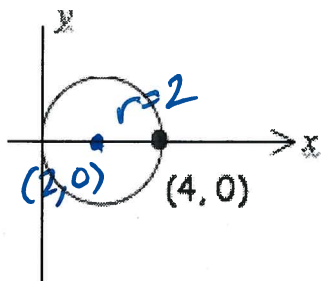
$$(x-2)^2 + (y+7)^2 = 9$$

2. Center (-5, 6) passing through (1, 8)

$$\begin{aligned} (x+5)^2 + (y-6)^2 &= r^2 \\ (1+5)^2 + (8-6)^2 &= r^2 \\ 6^2 + 2^2 &= r^2 \\ 36 + 4 &= r^2 \end{aligned}$$

$$(x+5)^2 + (y-6)^2 = 40$$

3.

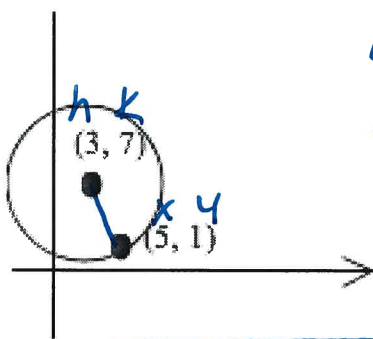


$$(x-2)^2 + (y-0)^2 = 2^2$$

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

Find the a) center b) radius c) general form of the circle.

4.



a) (3, 7)  
b)  $\sqrt{40}$

$$d = \sqrt{(5-3)^2 + (1-7)^2}$$

$$d = \sqrt{2^2 + (-6)^2}$$

$$d = \sqrt{40}$$

c)  $(x-3)^2 + (y-7)^2 = 40$

5. Endpoints of a diameter: (1, 2) and (7, -6)

$$d = \sqrt{(7-1)^2 + (-6-2)^2}$$

$$d = \sqrt{36 + 64}$$

$$d = \sqrt{100}$$

$$d = 10$$

Therefore,  $r = 5$

Center is the midpoint:

$$M = \left( \frac{1+7}{2}, \frac{2-6}{2} \right)$$

$$M = (3, -2)$$

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

a) Find the center and radius b) graph c) find the intercepts, if any, of the graph

6.  $\frac{3(x+1)^2 + 3(y-5)^2}{3} = \frac{27}{3}$

$(x+1)^2 + (y-5)^2 = 9$

Center:  $(-1, 5)$ , radius = 3

y-intercept(s):  $x=0$

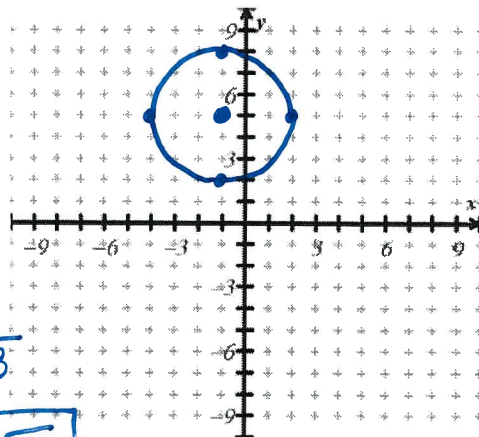
$(0+1)^2 + (y-5)^2 = 9$

$1 + (y-5)^2 = 9$

$(y-5)^2 = 8$

$y-5 = \pm\sqrt{8}$

$y = 5 \pm 2\sqrt{2}$



7.  $x^2 + y^2 + 8x - 12y + 3 = 0$

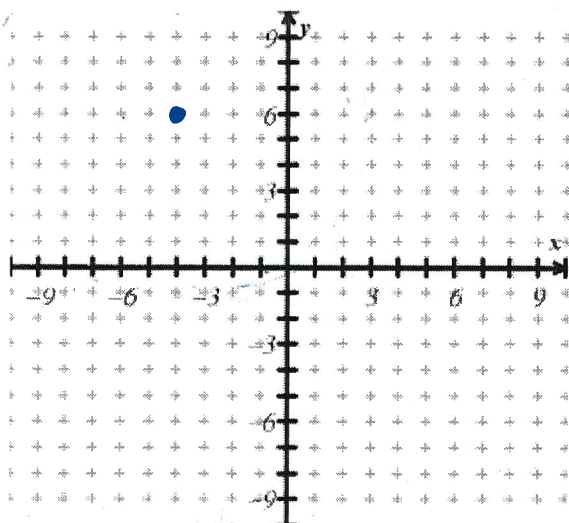
$x^2 + 8x + y^2 - 12y = -3$

$x^2 + 8x + \square + y^2 - 12y + \square = -3$

$x^2 + 8x + 16 + y^2 - 12y + 36 = -3 + 16 + 36$

$(x+4)^2 + (y-6)^2 = 49$

Center:  $(-4, 6)$ , radius = 7



8.  $2x^2 + 2y^2 - 8x + 18y + 43 = 0$

$2x^2 - 8x + 2y^2 + 18y = -43$

$2(x^2 - 4x + 4) + 2(y^2 + 9y + \frac{18}{4}) = -43$

$2(x-2)^2 + 2(y + \frac{9}{2})^2 = -26$

