

Assignment #2

Name Answer Key

Due 11 September 2009

1. Find the equation of the line that is perpendicular to $2x + 3y = 18$ and passes through its x -intercept. Sketch these lines.

4

$$2x + 3y = 18$$

$$3y = -2x + 18$$

$$y = -\frac{2}{3}x + 6$$

$\therefore m = -\frac{2}{3}$

and $m_{\perp} = \frac{3}{2}$

$$2x + 3(0) = 18$$

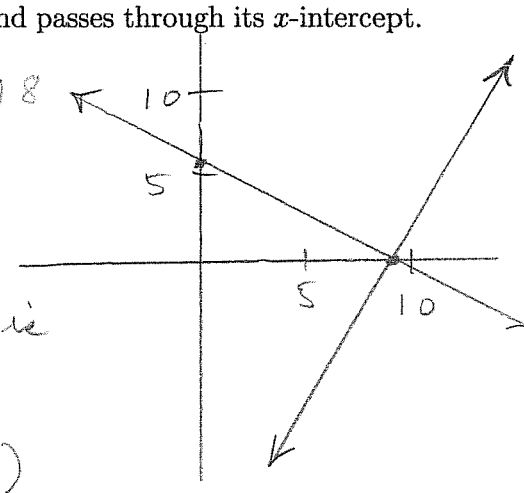
$$2x = 18$$

$$x = 9$$

\therefore x -intercept is $(9, 0)$.

$$y - 0 = \frac{3}{2}(x - 9)$$

$$y = \frac{3}{2}x - \frac{27}{2}$$



2. What are the center and radius of the circle given by the equation $x^2 + y^2 + 4x - 2y + 2 = 0$?

3

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

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

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

$$(x - (-2))^2 + (y - 1)^2 = (\sqrt{3})^2$$

$c(-2, 1)$
 $r = \sqrt{3}$

3. Sketch the graph of the parabola given by the equation $x^2 - 2x + y - 2 = 0$. Include the vertex and at least two other points in your sketch.

3

$$x^2 - 2x + 1 + y = 2 + 1 = 3$$

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

$V(1, 3)$ is the vertex.

