Name: _____

MAT1275CO College Algebra and Trigonometry - Section D103

Exam 4 - Version 1

Directions: Please write all your answers **CLEARLY** in the space provided. **SHOW ALL OF YOUR WORK.** Answers without work shown when necessary will receive no credit. Your final answers should be $\boxed{\textbf{BOXED}}$ and written in the provided spaces. Please make clear notes on the front of the page to point to any work on the back of the page that you want graded.

1. Solve the following equations using the method of your choice.

   (a) (+8 points) $2x^2 = 1 - x$

   _____

   (b) (+8 points) $x^2 + 2x - 48 = 0$

   _____

   (c) (+6 points) $x^3 - 9x = 0$

   _____

2. Solve. Be careful not to include extraneous solutions. If there are no solutions, write "No Solution."
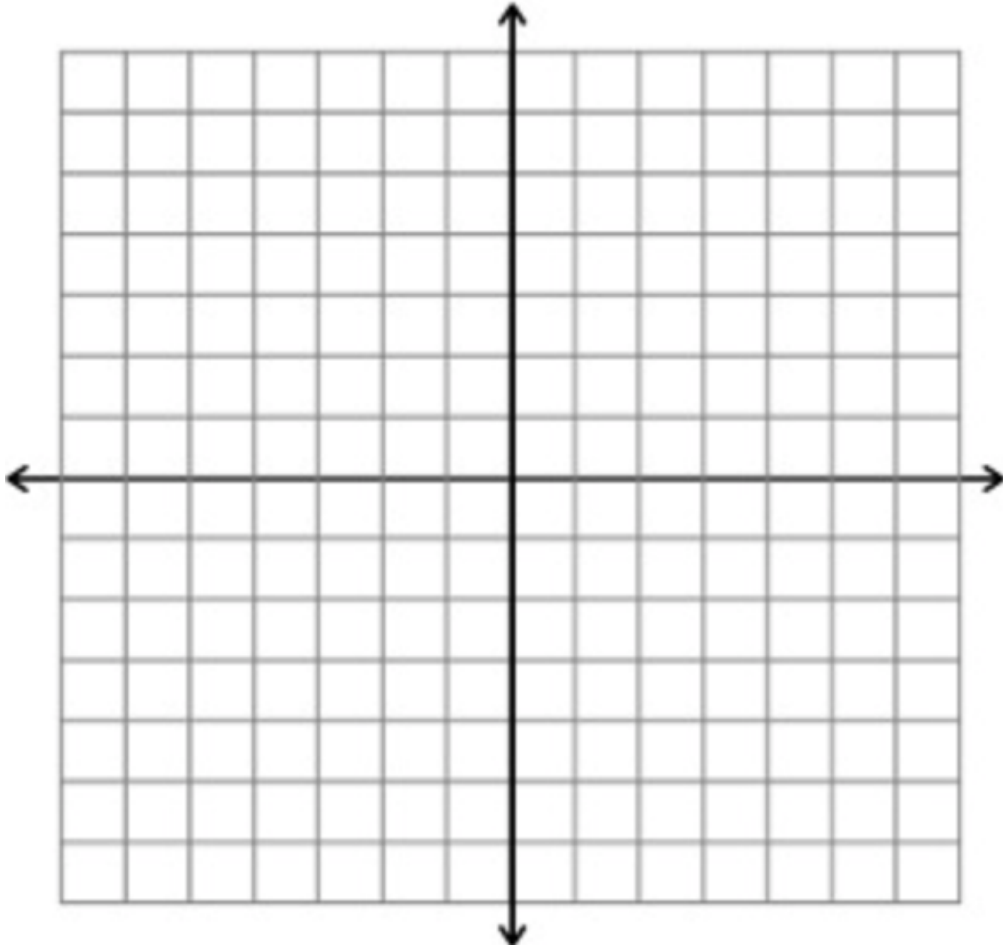
(a) (+6 points) $\frac{4}{x} - 1 = 2$

(b) (+9 points) $\frac{3x}{9x+3} - 2 = \frac{3x-1}{3x+1}$

(c) (+9 points) $3 - \sqrt{x} = \sqrt{x-9}$

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3. (+10 points) Given the following quadratic equation, find the x- and y- intercepts, the vertex, and sketch the graph. The vertex and intercepts should be listed as coordinate pairs (x, y) and be $\boxed{BOXED}$. Label the vertex and all intercepts in the graph.

$$y = -x^2 + 4x - 3$$

4. (a) (+7 points) List the center and radius of the following circle. Then, write the equation of the circle.
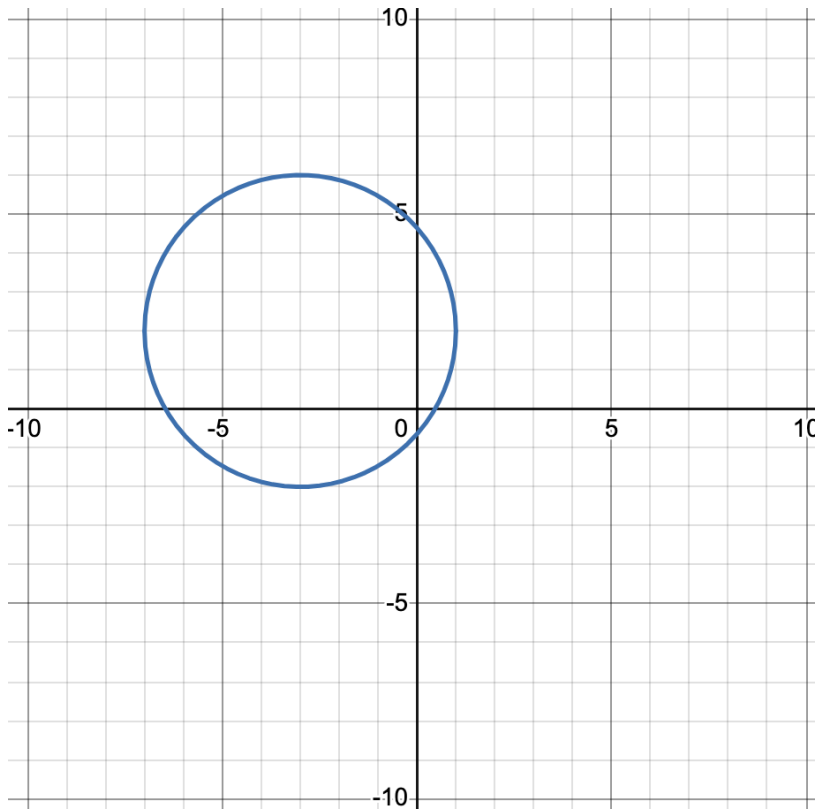
Center:(_____, _____) Radius:_____

Equation:_____

(b) (+5 points) Find the center and the radius of the circle with equation $x^2 + y^2 = 5$.
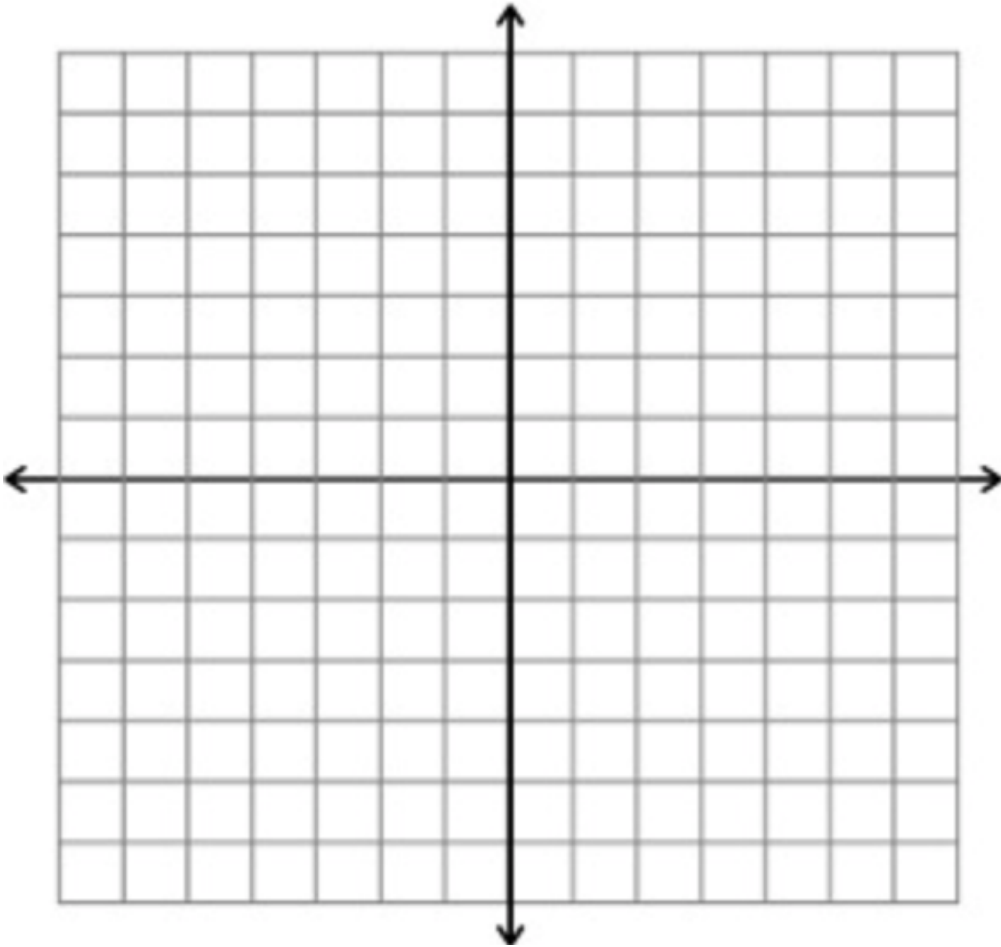
Center:(_____, _____) Radius:_____

5. Find an equation for the line with the listed specifications. Write the line in slope-intercept form, or in the form $x = a$.

(a) (+7 points) the line perpendicular to $x = 5$ that passes through the point $(3, 2)$

(b) (+7 points) the line that passes through $(0, 6)$ and $(-8, 2)$

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6. (+8 points) Graph the given linear equation. You must plot and label at least three points.

$$y = -\frac{2}{3}x - 4$$

7. (+8 points) Are the following lines parallel, perpendicular, or neither?

- $4x + 5y = 2$
- $y = \frac{5}{4}x + 8$

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8. (+2 points) Write the quadratic formula for solutions to the quadratic equation $ax^2 + bx + c = 0$.

BONUS: Find the center and radius of the circle by completing the square.

$$x^2 + y^2 - 6y = 27$$

Center:(_____, _____) Radius:_____