Worksheet 4

Sections 1.8 and 1.9

Section 1.8

Problem 1. Solve the nonlinear inequality

$$3x^2 - 3x < 2x^2 + 4.$$

Express the solution using **interval notation** and graph the solution set on a number line.

Problem 2. Solve the nonlinear inequality

$$(x+3)^2(x+1) > 0.$$

Express the solution using **interval notation** and graph the solution set on a number line.

Problem 3. Solve the nonlinear inequality

$$\frac{2x+6}{x-2} < 0.$$

Express the solution using **interval notation** and graph the solution set on a number line.

Problem 4. Solve the absolute value inequality

$$|8x+3| > 12.$$

Express the solution using **interval notation** and graph the solution set on a number line.

Section 1.9

Problem 5. If $M(6,8)$ is the midpoint of the line segment AB and if A has coordinates $(2,3)$, find the coordinates of B.

Problem 6. Make a table of values, and sketch the graph of the equation $y = x^2 - 2$.

Problem 7. Show that the equation represents a circle by rewriting it in standard form.

$$x^2 + y^2 + 4x - 6y + 12 = 0.$$

Find the center and radius of the circle, and then sketch its graph.