MA 134 – Take Home Prerequisite Review I Name _____

Show your work for credit, writing your final answer in the space provided. Refer to the indicated sections in your textbook.

1. (Section R.1) Study how to use interval notation in section R.1. Fill in the remainder of the table.

Inequality	**Number Line Graph**	**Interval**
$x \geq -3$		$[-3, \infty)$
$x > -3$		$(-3, \infty)$
$2 \geq x$		
$2 > x$		
$-1 < x \leq 2$		
$x \in$ *real numbers*		

2. (Sections R.2, R.3) Simplify these algebraic expressions. Your final answer should not contain negative exponents.

a. $(5x-2)-(3x-7) =$ _____ *b.* $(5x-2)(3x-7) =$ _____

c. $(3x-7)^2 =$ _____ *d.* $\left(\frac{2}{5}\right)^{-3} =$ _____

e. $(6ab^{-2})(-2a^{-3}b^5) =$ _____ *f.* $(2ab^{-2})^{-3} =$ _____

3. (Section R.3) Parts *a* – *c* refer to the polynomial $4x^3 + 9x^6 - \frac{1}{4}x^2 - 10 + x$.

a. Write the polynomial in **descending powers of the variable**: _____

b. The **degree** of this polynomial is _____ *c*. The **leading coefficient** of this polynomial is _____.

d. A **linear** equation has degree ____. A **quadratic** equation has degree _____. A **cubic** equation has degree ____.

4. (Section R.6) Write the expression in simplified radical form:

a. $\sqrt{64} =$ _____, $\sqrt[3]{64} =$ _____ *b.* $8^{5/3} =$ _____

c. $\sqrt{5} \cdot \sqrt{5} =$ _____ *d.* $\sqrt{48} =$ _____

e. $5\sqrt{6} \cdot 2\sqrt{3} =$ _____ *f.* $(2\sqrt{3}-5)(7\sqrt{3}+4) =$ _____

5. (Section R.4) **Completely** factor these non-prime polynomials:

a. $x^2 - 10x + 21 =$ _____ *b.* $3x^2 - x - 14 =$ _____

c. $49x^2 - 25 =$ _____ *d.* $2x^3 - 3x^2 + 4x - 6 =$ _____

6. (Section R.7) Solve these equations by **factoring**. Because they are degree 2, they have two solutions. Circle or underline your solutions.

a. $x^2 = 49$ *b.* $x^2 - 4x - 21 = 0$ *c.* $3x^2 - x = 14$