Worksheet 1 – Prerequisites

These are basic skills that you will need for Pre-Calculus. If you struggle with this worksheet, you should expect to seek additional support throughout the semester at the Q-Center and during office hours available from your professor and/or your TA. You should be able to simplify the expressions and solve the equations and inequalities. Complete this worksheet and hand in to your TA – they will tell you when it is due. **NO LATE PAPERS WILL BE ACCEPTED.**

Be sure to show all of the work that leads to the answer.

Part 1 – Simplify each expression, if it cannot be simplified any further state “simplified”:

1) \( \frac{3x^2 + x}{x} \)

2) \( \frac{3 + 6x}{x} \)

3) \( \frac{3 + 6x}{3} \)

4) \( \frac{3 + 6x}{1 + x} \)

5) \( \frac{3 + 6x}{1 + 2x} \)

6) \( \frac{3 + 6x}{3 - 6x} \)

7) \( \frac{3 + 6x}{-3 - 6x} \)

8) \( \frac{x + y}{y} \)

9) \( \frac{3a^2 - 2a}{ax} \)

Part 2 – Solve each equation.

1) \( \frac{y}{3} + 4 = \frac{y}{2} \)

2) \( \frac{2}{3}x + 3(x - 1) = 8 \)
3) \( 3 + 2x = 2 \left( \frac{3}{2} + x \right) \)
4) \( \frac{1}{x} = \frac{3}{x} + 1 \)

5) \( \frac{3}{5} x + 8 = -x + \frac{1}{5} (2 + 8x) \)
6) \( \sqrt{x} = 2 - x \)

7) \( \frac{2x - 1}{x + 2} = \frac{4}{5} \)
8) \( (x + 2)^2 = 4 \)

9) \( |4x + 1| = 3 \)
10) \( |4x + 1| = 3x \)

11) \( |2-2x| = 100 \)
12) \( |1-x| = x \)
Solve and graph your solution on a number line.

13) $x + 5 < 1$

14) $1 - 2x \geq 0$

15) $4 \times 2 - x > 3$

16) $3 < \frac{x + 2}{3} \leq 5$