Math 111I-006 Basic College Mathematics

Exam #1 A
September 18, 2014

Instructor: Ann Clifton

Name: _____

Answer the following questions. *You must show your work to receive full credit.* Be sure to make reasonable simplifications. Give exact answers. Indicate your final answer with a box.

Simplify using exponent rules.

1. $\left(\dfrac{16x^{-2}y^{6}}{x^{8}y^{-4}}\right)^{-1/2}$

2. $\sqrt[3]{4xy^{2}}\sqrt[3]{2x^{5}y}$

Perform the indicated operation and simplify.

3. $\dfrac{x^{2}-10x+21}{2x^{2}-12x-14} \div \dfrac{x^{2}+2x-15}{2x^{2}+12x+10}$

4. $\dfrac{3}{y^2+6y+8} - \dfrac{2}{y^2-4}$

Solve the inequality. Write your solution in interval notation and graph it on the real number line.

5. $x^2 - x - 6 > 0$

6. $-14 \geq -4 - 2x > -28$

Solve the quadratic equation by factoring.

7. $x^2 + x = 30$

Solve the quadratic equation by any method learned in class.

8. $x^2 + 7x + 1 = 0$

Factor completely. Indicate if prime.

9. $y^2(x^2 - 4) - (x^2 - 4)$

10. $27p^3 - 1$

11. $3x^3 + 6x^2 - 2x - 4$

12. $144x^2 + 49$

13. Let $P(2, 1)$ and $Q(3, -2)$ be two points in the coordinate plane.
    (a) Find the distance between the points P and Q.

    (b) Find the midpoint between the points P and Q.

14. A set of data is given in the following table. Find a linear equation to model the data. Use your model to predict the value of y when $x = 20$.

x	y
0	12
1	17
2	22
3	27
4	32

15. **Bonus** Tell me a joke or something you find interesting.