Homework 1

This needs to be turned in by: May 18, at the beginning of class. Please write your work and answers on a separate sheet of paper and box your final answers. Don't forget your name.

1. **Factor each expression.**
   (a) $4x^2 - 25$
   (b) $2x^2 + 5x - 12$
   (c) $x^3 - 3x^2 - 4x + 12$
   (d) $x^4 + 27x$
   (e) $3x^{3/2} - 9x^{1/2} + 6x^{-1/2}$
   (f) $x^3y - 4xy$

2. **Simplify the rational expression.**
   (a) $\frac{x^2+3x+2}{x^2-x-2}$
   (b) $\frac{2x^2-x-1}{x^2-9} \cdot \frac{x+3}{2x+1}$
   (c) $\frac{x^2}{x^2-4} - \frac{x+1}{x+2}$
   (d) $\frac{\frac{x}{y}-\frac{y}{x}}{\frac{1}{y}-\frac{1}{x}}$

3. **State whether each equation is true or false.**
   (a) $(p+q)^2 = p^2 + q^2$
   (b) $\sqrt{ab} = \sqrt{a}\sqrt{b}$
   (c) $\sqrt{a^2+b^2} = a+b$
   (d) $\frac{1+TC}{C} = 1+T$
   (e) $\frac{1}{x-y} = \frac{1}{x} - \frac{1}{y}$
   (f) $\frac{\frac{1}{x}}{\frac{a}{x}-\frac{b}{x}} = \frac{1}{a-b}$

4. **Textbook, p. 19 #2**

5. **Textbook, p. 19 #4**

6. **Textbook, p. 20 #14**

7. **Textbook, p. 20 #20**

8. **Textbook, p. 21 #32**

9. **Textbook, p. 21 #34**

10. **Textbook, p. 21 #44**