BLC 150: Practice Problems for Midterm

1. Evaluate the following expressions

   (a) $(-2)(-7) - 8 + 3$

   (b) $\dfrac{3+5}{2} - 3$

   (c) $3(4-2) + 2^3$

   (d) $-2(1-4) - 3(2+4)$

2. Evaluate the following expressions. Give your answers as fractions in lowest terms.

   (a) $\dfrac{2}{4/5}$

   (b) $\dfrac{3/7}{5}$

   (c) $\dfrac{7}{\frac{1}{3} + \frac{1}{4}}$

   (d) $\dfrac{\frac{1}{2} + \frac{1}{4}}{3}$

3. Simplify the following expressions by combining the fractions. Give your answers as fractions in lowest terms.

   (a) $\dfrac{1}{x+1} + \dfrac{3}{x-2}$

   (b) $\dfrac{3}{x} + \dfrac{5}{x^2}$

4. Multiply the following polynomials.

   (a) $(x-3)(x-5)$

   (b) $(x+2)^2$

   (c) $(x^2+4)(x-2)$

   (d) $(x+3y)(x-2y)$

5. Factor the following polynomials:

   (a) $x^2 - 9$

   (c) $x^2 - 7x$

   (b) $x^2 - 7x + 12$

   (d) $x^2 + 6x + 8$

6. Solve the following equations:

(a) $\dfrac{x}{4} + 3 = 7$

(b) $\dfrac{-x+3}{4} - 2 = 1$

(c) $x = 3x + 4$

(d) $x - 0.05x = 9.5$

(e) $3(2x - 1) - (3x - 4) = 4$

(f) $-4(2x - 3) = 3(x + 1) - 2x$

(g) $\sqrt{x + 3} = 5$

(h) $6x^2 - 3 = 2 + x^2$

(i) $\dfrac{x}{2} - \dfrac{x}{3} = 5$

(j) $\dfrac{2}{x} + \dfrac{1}{3x} = 2$

(k) $(x - 3)(2x - 5) = 0$

(l) $x^2 - 2x - 8 = 0$

(m) $|x + 1| - 3 = 5$

(n) $x^2 - x = 6$

7. Carol buys a bunch of books. She donates half of the books to the local library. Then, she gives five of the books away as birthday presents. If she now has 14 books, how many did she originally purchase?

8. George has 37 marbles colored green, blue, and red. He has twice as many red marbles as green marbles, and he has three fewer blue marbles than green marbles. Determine how many red marbles he has.

9. The population of Poughkeepsie is 30,640. If the population increases by 5%, what will the population be?

10. The price of a book increases from $20.00 to $25.00. By what percent did the price of the book increase?