HOMEWORK 1 - MATH 160

DUE DATE: Tuesday, September 1

INSTRUCTOR: George Voutsadakis

Read each problem **very carefully** before starting to solve it. Two out of the ten problems will be chosen at random and graded for a total of 20 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Write in interval notation (x denotes a real number):
   (a) $x : -3 \leq x < 15$
   (b) $x : x > \frac{3}{2}$
2. Simplify the expressions:
   (a) $\frac{a^6 b^{-5}}{(a^3 b^{-2})^{-3}}$
   (b) $\sqrt[3]{16x^5y^{10}}\sqrt[3]{4xy^2}$
3. Factor the following expressions completely:
   (a) $12x^3 - 6x^2 - 18x$
   (b) $x^3 + 4x^2 - 9x - 36$
4. Use the quadratic formula to solve the following equations:
   (a) $x^2 - 2x - 5 = 0$
   (b) $2x^2 + 8x + 7 = 0$
5. Perform the indicated operations and simplify the expressions:
   (a) $\frac{-2x}{\sqrt{x+1}} + 4\sqrt{x+1}$
   (b) $\frac{x^{-2}-y^{-2}}{x^{-1}+y^{-1}}$
6. Find the values of x that satisfy the given expression:
   (a) $2x^2 + 3x - 2 \leq 0$
   (b) $|\frac{x+1}{x-1}| = 5$
7. Solve the following inequalities:
   (a) $\frac{2x-1}{x+2} \leq 4$
   (b) $|2x - 5| < 3$
8. Find the distance between the points $(-2, -7)$ and $(1, -3)$.
9. Find an equation for the circle that has center at $(5, 8)$ and passes through $(-7, 3)$.
10. No tenth problem this week!