EXAM 4 - MATH 102 YOUR NAME:

Friday, December 1 George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

- 1. Perform the following operations and simplify:
 - (a) $2\sqrt{x^3} + 3\sqrt{x^3} 2x\sqrt{4x} =$

(b)
$$\frac{2\sqrt{3}}{3\sqrt{6} - \sqrt{12}} =$$

2. Solve the radical equation

$$\sqrt{3x+1} - \sqrt{2x-1} = 1.$$

3. Solve the quadratic equation

$$(x^{2} + 2x)^{2} - 7(x^{2} + 2x) + 12 = 0.$$

4. This problem will guide you through the steps for plotting the graph of the quadratic function

$$f(x) = -x^2 - 5x - 4.$$

- (a) Find its vertex.
- (b) Find its opening direction.
- (c) Find its *y*-intercept.
- (d) Find its x-intercept(s).

(e) Sketch the graph by collecting all information gathered in Parts (a)-(d).

5. Use either the graphical method or the test point method to solve the quadratic inequality and write your answer in interval notation.

$$(x+4)^2 > 10x+31.$$