

**Directions:** Complete the following problems in the space below or on the back of the paper. To receive any credit, you must show your work.

**Problem 1.** Solve for  $x$ :

$$2 \log_8 \sqrt{x} + \log_8(x + 2) = 0.$$

**Problem 2.** Second National Bank offers an account that earns 4.42% per year, compounded continuously. If a person invests \$11,000 in this account, what will be the value of the account at the end of 12 years? (Round your answer to the nearest cent.)

**Problem 3.** Suppose we are given the revenue and cost models

$$R(x) = -2x^2 + 2x + 16$$

$$C(x) = 3x - 5$$

(a) Find the profit function.

(b) Find the break even quantity (take note of the signs of your possible answers).