

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Instructions

Do the following problems on a separate sheet of paper (or two, or three, or four). You are allowed to consult the course text, the class notes, and the notes posted on the course website. You are not, however, allowed to collaborate with other students. **Write the solutions neatly and do not use multiple columns.** Staple your write-up, using this paper as the cover page.

**Problem 1.** Solve  $2x^2 + 11x + 5 = 0$  by factoring.

**Problem 2.** State the quadratic formula and copy the proof from page 49 of the textbook.

**Problem 3.** Solve  $2x^2 + 11x + 5 = 0$  by completing the squares.

**Problem 4.** Solve  $2x^2 + 11x + 5 = 0$  using the quadratic formula.

**Problem 5.** What quantity of pure acid must be added to 500mL of a 50% acid solution to produce a 60% acid solution?

**Problem 6.** Henry and Irene working together can wash all the windows of their house in 1 h 48 min. Working alone, it takes Henry 1.5 h more than Irene to do the job. How long does it take each person working alone to wash all the windows?

**Problem 7.** A salesman drives from Ajax to Barrington, a distance of 120mi, at a steady speed. He then increases his speed by 10mi/h to drive the 150mi from Barrington to Collins. If the second leg of his trip took 6 min more time than the first leg, how fast was he driving between Ajax and Barrington?

**Problem 8.** Two fishing boats depart a harbor at the same time, one traveling east, the other south. The eastbound boat travels at a speed 3mi/h faster than the southbound boat. After two hours the boats are 30 mi apart. Find the speed of the southbound boat.