1. 10 pts. each   Solve the quadratic equation.

   (a) By factoring: $7x - 6x^2 = -10$

   (b) By completing the square: $-3x^2 + 9x = 7$

2. 15 pts.   The difference of the squares of two positive consecutive even integers is 84. Find the integers by setting up and solving an algebraic equation.

3. 15 pts.   A rectangular piece of metal is 10 cm longer than it is wide. Squares with sides 2 cm long are cut from the four corners, and the flaps are folded upward to form an open box. If the volume of the box is 832 cm^3, what were the original dimensions of the piece of metal?

4. 15 pts.   If Teddy could paint Donald's "beautiful wall" in 7 hours working by himself, and Marcobot could paint the same wall in 4 hours working by himself, how fast would the wall be painted if Teddy and Marcobot worked together?

5. 10 pts. each   Solve each equation.

   (a) $\dfrac{t}{t+2} + \dfrac{1}{t} + 3 = \dfrac{2}{t^2 + 2t}$

   (b) $\sqrt{2x} - x + 4 = 0$

   (c) $\sqrt{2x + 5} - \sqrt{x + 2} = 1$

   (d) $3r^4 + 10r^2 - 25 = 0$

   (e) $|x + 1| = |1 - 3x|$

6. 10 pts. each   Solve each inequality. Write each solution set in interval notation.

   (a) $-3 < \dfrac{x - 4}{6} < 2$

   (b) $x^2 + 5x < -7$

   (c) $\dfrac{4}{2 - x} \geq \dfrac{3}{1 - x}$

   (d) $|8x - 3| < 4$

   (e) $|3 - 2x| \geq -2$

7. 10 pts.   If a segment has midpoint at $(-7, 6)$ and an endpoint at $(-9, 9)$, what are the coordinates of the other endpoint?

8. 10 pts.   Find the center-radius form of the circle having a diameter with endpoints $(-1, 2)$ and $(11, 7)$.