1. 10 pts. each Solve the quadratic equation.

   (a) $5x^2 - 2 = 3x$ (by factoring)

   (b) $x^2 - 3x - 6 = 0$ (by completing the square)

2. 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?

3. 15 pts. Lennier and Vir have received walkie-talkies for May Day. If they leave from the same point at the same time, Lennier walking south at 2.7 mph and Vir walking west at 3.3 mph, how long will they be able to communicate if the range of the walkie-talkies is 6 miles? Round your answer to the nearest minute.

4. 10 pts. each Solve each equation.

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

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

   (c) $\sqrt{x} - \sqrt{x+3} = -1$

   (d) $4x^4 + 3x^2 - 1 = 0$

   (e) $|20 - 3x| = 29$

5. 10 pts. each Solve each inequality. Write each solution set in interval notation.

   (a) $6x - (2x + 3) \geq 3x - 5$

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

   (c) $6x^2 - 11x < 10$

   (d) $2x^3 - 3x^2 - 5x \leq 0$

   (e) $\dfrac{10}{2x - 3} \leq 5$

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

6. 10 pts. Find the distance between $(-4, 3)$ and $(6, 2)$.

7. 10 pts. Write $x^2 + y^2 + 8x - 6y + 16 = 0$ in Center-Radius form, then give the center and radius of the circle.

8. 10 pts. Find the slope of the line through $(-7, 2)$ and $(-3, 8)$.

9. 10 pts. A line passes through the point $(2, 4)$ and has slope -3. Write an equation for the line in standard form.

10. 10 pts. Write an equation in slope-intercept form for the line through the point $(2, 7)$ and perpendicular to $3x + 4y = 1$.