Math 06, Homework 4 on Sections 8.3, 8.4
due Tue, Feb 26 at the start of class.

These first eight questions from the book are 2 points each. Write your work on a separate sheet. Show clearly all your working out and reasoning and check your answers match the ones in the book at the end of the section.

1. **Q17, p. 850.** Find the point symmetric to $(6, 5)$ through the axis of symmetry $x = 4$.
2. **Q27, p. 850.** Find the axis of symmetry, vertex, x-intercepts and sketch:
$$f(x) = -x^2 - 2x$$
3. **Q33, p. 851.** Find the axis of symmetry, vertex, x-intercepts and sketch:
$$f(x) = x^2 - 6x + 8$$
4. **Q47, p. 852.** Find the axis of symmetry, vertex, two symmetric points and sketch:
$$f(x) = 3x^2 + 12x + 5$$
5. **Q1, p. 865.** A company's weekly profit P is related to the number of items sold by $P(x) = -0.3x^2 + 60x - 400$. Find the number of items that should be sold each week to maximize the profit. Then find the amount of that profit.
6. **Q7, p. 865.** Solve and simplify the solutions: $x^4 - 14x^2 + 45 = 0$
7. **Q11, p. 865.** Solve and simplify the solutions: $x^4 + x^2 - 20 = 0$
8. **Q15, p. 866.** Solve and simplify the solutions: $x - 8\sqrt{x} + 15 = 0$

These next seven questions are 2 points each. It is very important that you show clearly any work you had to do to get the answer and explain your reasoning.

(8.3) Q9. The graph of $y = -2x^2 + 2x + 10$ is similar in shape to which of these letters?

c, x, u, n

(8.3) Q10. Find the axis of symmetry of this graph: $y = x^2 - 4x + 1$

(8.3) Q11. Graph the parabola $y = x^2 - 4x + 3$ and indicate on your graph the axis of symmetry, the vertex and the y-intercept.

(8.3) Q12. How many x-intercepts does the parabola $y = 2x^2 + x + 1$ have?

(8.4) Q13. Find the solution set for the equation: $x^4 - 5x^2 + 6 = 0$

(8.4) Q14. Find the solution set for the equation: $x - 6\sqrt{x} - 16 = 0$

(8.4) Q15. If the height h in feet of a ball at time t in seconds after being thrown is

$$h = -16t^2 + 64t,$$

find the maximum height the ball will attain.