1. Solve using the method of factoring.

2. Solve using the quadratic formula. Leave your answers in exact radical form.

3. a) Write the function  in vertex form.

b) Starting with the vertex form from part (a) above determine the *x*-intercepts of the function using the method of isolating the variable. Approximate answers to two decimal places of accuracy.

4. Determine the value of the discriminant and state the number of *x*-intercepts for each parabola.

a)  b) 

5. Determine the equation, in factored form, of the quadratic function with *x*-intercepts

and passing through the point (3, -20).

6. Find the point(s) of intersection (if any) of  and using an algebraic method. Show all steps.

7. The profit function for a product is given by , where *x* is the number of products sold. Both the number of products and the profit are **in thousands**.

1. Determine how many items must be sold for the company to break-even.
2. Determine how many items must be sold for the company to make a profit of eight thousand dollars.

8. A company’s profit, in thousands of dollars, on sales of video games is modeled by the function , where *n*  is the number of video games sold, in thousands.

Additionally, the company’s profit, in thousands, on sales of movie videos is modeled by the function, where *n* is the number of movie videos sold, in thousands.

Calculate the maximum profit that the company can earn from both: video games and movie videos combined. Show all work.

9. A bike rental agency has 150 bikes. The owner determines that at a price of $48 per week, he can rent all the bikes. For each $2 increase in price, 4 fewer bikes get rented.

1. Determine what rental charge will maximize the revenue.
2. Each of the rented bikes need to be serviced in maintenance. Suppose it costs the owner $5 per week per bike for maintenance. Determine the maximum profit?

10. Determine the equation, in standard form, of the quadratic function passing through the point

(5, -1) with zeros  and .

11. Do the following questions from the textbook:

Pg. 202: #1-10, 12, 14-18, 21-23

Pg. 204: #1, 2, 6-9

**Optional:**

pg. 207: #12 [Hint: *# of seats* = 22 – *x*, Cost = 225 + 30(22 – *x*)]

pg. 209: #35 [Hint: *# of students* = 25 –2*x*, Cost = 5500 + 240(25 – 2*x*)]