**Chapter 2.7: The Profit Equation**

1. Describe the profit situation in terms of the expense and revenue functions in the graphs below.





1. Greenyard’s manufactures and sells yard furniture made out of recycled materials. It is considering making a lawn chair from recycled aluminum and fabric products. The expense and revenue functions are given below.

$$E=-1850p+800,000$$

$$R=-100p^{2}+20,000p$$

* 1. Determine the profit function
	2. Determine the price at which the business earns the maximum profit.
	3. Determine the maximum profit.
	4. Use the graphing calculator to check your calculations.
1. Mountaineer Products Incorporated manufactures mountain-bike accessories. It is considering making a new type of reflector for night biking. The expense and revenue functions are below.

$$E=-450p+90,000$$

$$R=-185p^{2}+9,000p$$

* 1. Determine the profit function
	2. Determine the price at which the business earns the maximum profit.
	3. Determine the maximum profit.
	4. Use the graphing calculator to check your calculations by graphing and tracing the functions.
1. Business Bargains manufactures office supplies. It is considering selling sticky-notes in the shape of the state in which they will be sold. The expense and revenue functions are below.

$$E=-250p+50,000$$

$$R=-225p^{2}+7,200p$$

1. Determine the price at which the business earns the maximum revenue.
2. Determine the price at which the business earns the maximum profit *(hint: find the profit function first!)*
3. Graph the revenue, expense and profit equations on the same coordinate plane. Sketch the graph below:
4. Does the company earn the most profit at the same price it earns the most revenue? Why or why not?
5. The graphs below depict the demand, expense, revenue and profit functions for a startup business. Summarize the business model by filling in the blanks using the information in the graphs.

In summary, to start this business, more than \_\_\_\_\_\_\_\_\_\_\_\_ widgets should be manufactured. Each should be sold for $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The breakeven point is reached at a price of $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per widget. A profit is made at any price between those points.

The ideal selling price of $\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs at the maximum profit. At that selling price, there is a revenue of $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and expenses of $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, resulting in a profit of $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



