Part 1
Suppose you start a business. Determine a product your business will manufacture or produce. Research the cost of producing one unit of the product. Pick a product whose cost per unit is between $15 and $310. Document the source of your cost per unit calculations. Include a discussion of the costs involved in making the product (i.e. what are the materials and their costs? What are the costs of labor, etc.)

Part 2
Suppose total fixed costs including rent and utilities for your business are $7,500 per month. Using the cost per unit that you determined in part 1, construct a linear cost function, \( C(x) \), for your product. If you can afford $150,000 in total costs per month, how many units can you produce?

Let \( x \) represent the quantity of units of your product demanded each month.

Suppose that the demand as a function of price is \( x = 9600 - 30p \). Construct the revenue function, \( R(x) \), for your product. Include the feasible range of units demanded per month (i.e. what is the smallest number of products you could sell and what is the largest number of products you could sell in a month).

Next, find the profit function, \( P(x) \). Determine the break-even points and interpret your results.

Part 3
Determine the marginal cost and marginal revenue at a production level of 1,000 units and interpret the results.

Suppose your company is currently producing 1,000 units per month. Based on the analysis you have done so far, should you increase or decrease production? Justify your answer.

Finally, determine the optimal production level that will maximize profits.

Gather the information from parts 1, 2, and 3 and type a report to summarize your findings. Include in this report, a brief summary on the importance of marginal analysis to business operations. Be sure to include a “Works Cited” page and include your sources used to determine the values used in your research. The paper is worth 70 points of your overall grade and is due by 3pm on Friday, November 21.