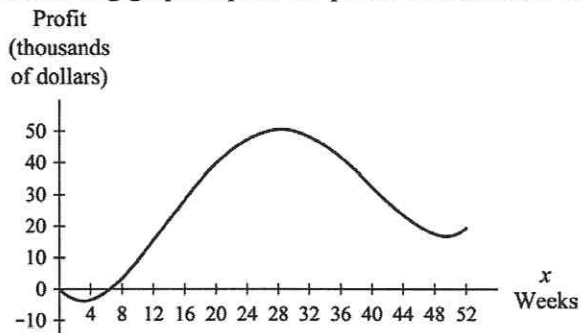


Name: _____
Group Members Present:

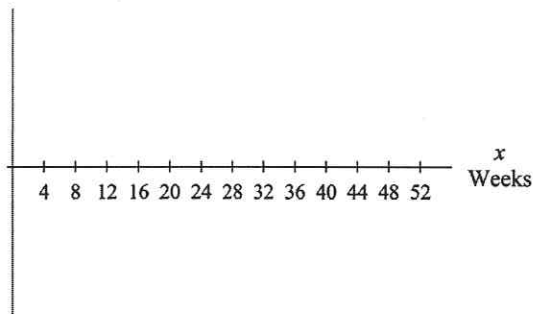
Grade: _____

_____, _____, & _____

1. The following graph depicts the profit of a business during a one-year period.



- Estimate the points on the graph corresponding to peaks and valleys. The peaks are called relative maximum points, and the valleys are called relative minimum points.
- Draw tangent lines at the relative extreme points identified in part *a*.
- What is the slope of the line tangent to the lowest point on the graph shown? _____
- What is the slope of the line tangent to the highest point on the graph shown? _____
- On the axes provided, draw a slope graph of the profit function.



- What is the output value of the slope graph corresponding to the relative extreme points on the profit graph?
- What is the name of the mathematical formula for the slope graph?

2. The profit function shown in Question 1 is

Name: _____

Grade: _____

Group Members Present:

_____, _____, & _____

$$p(x) = 1.4875x^4 - 0.016x^3 + 0.485x^2 - 2.5x \text{ thousand dollars after } x \text{ weeks}$$

- a. Write the formula for the derivative of p .

- b. What does the derivative tell us about the profit graph?

- c. What does the derivative tell us about the slope graph in Question 1 part e ?

- d. What is the value of the derivative at the relative maximum point of the profit graph? _____

- e. What is the value of the derivative at the two relative minimum points of the profit graph? _____

- f. Use the derivative formula to calculate the weeks in which the highest and lowest profit occurred.

- g. Use the answers to part f to calculate the highest and lowest profit during the year.