



**Problem 1 – Punkin' Chunkin' Team 1**

The function is plotted on page 1.4. Drag the plotted point to find the values of interest.

1. What are the maximum height reached and the total horizontal distance traveled for the pumpkin? Round to the nearest foot.
2. At what distance above the ground was the pumpkin launched?
3. If a 10-foot high chain-linked fence is in the path of the pumpkin at a distance of 500 feet from where the pumpkin is released, will it pass over the fence? How high is the pumpkin when it reaches the fence?
4. Which values represent the zero, extremum, and  $y$ -intercept of the function?

**Problem 2 – Punkin' Chunkin' Team 2**

Use what you have learned in Problem 1 to answer the questions about Team 2's launch.

5. What are the maximum height reached and the total horizontal distance traveled for the pumpkin? Round to the nearest foot.
6. At what distance above the ground was the winning pumpkin launched?
7. Overall, how did the trajectory of Team 1's pumpkin compare to Team 2's pumpkin? Why do you think Team 2's pumpkin went farther?



**Problem 3 –Cost of Kayaks**

The function is plotted on page 3.3. Drag the plotted point to find the values of interest.

8. How many kayaks should the shop build to minimize the average cost per kayak?

9. What is the cost per kayak in the minimized cost situation?

**Problem 4 – Espresso Yourself**

The function is plotted on page 4.2. Drag the plotted point to find the values of interest.

10. What are the maximum profit and the approximate price per cup of espresso that yields this maximum profit?

11. According to the given model, at what price per cup will sales be so low that the stand will not obtain any profit?