Water Rockets: First Derivatives

Post-Lab
Each student group will test the accuracy of the compiled data chart and linear equation formulated in the lab.

Predictions:
1. State a linear volume-height equation from the lab
   
   \[ y = \text{______________} \]

2. Your group will be assigned a target height of (circle one)
   80 ft  100 ft  120 ft

3. Study the class data on optimum heights, pressure, volume, and equation #1 above. What is your group’s “best estimate” air pressure and water volume to reach the assigned height?
   
   Target height: _____ ft
   Pressure: _____ psi
   Water volume: _____ ml

Launch Results:
4. Fill a 2-liter bottle with the computed volume and air pressure (#2 above). Launch the water rocket and record the angle of elevation and distance from the rocket launch point (like the pre-lab) into a right triangle picture or model. Don’t forget to include the person’s height where necessary.

5. Compute the water rocket’s height.

6. Compare the “predicted” height to the “launch” height. How close were the two rocket heights?