Advanced Challenge Level 1 Problem #70 _____

Consider the situation described below.

A rectangular water tank is 8 feet long, 6 feet wide, and 4 feet deep. The tank is empty initially but water is added at a constant rate of 2 cubic feet per minute. Let x represent the time in minutes that water has been running into the tank. Let y represent the depth of the water in the tank (in inches).

For this challenge, you must answer each of the following. Show all of your work neatly organized.

1. What is the volume of the tank (in cubic feet)? Explain how you got your answer.

2. How long will it take to fill the tank? Explain how you got your answer.

3. Make a table of data (an x-y table) showing at least 5 data points (different values of x and y).

4. Draw a graph using your data. Label the horizontal axis <u>time in minutes</u> and the vertical axis <u>depth in inches</u>.

5. Write an equation giving y in terms of x.

6. Explain why the points on the graph form a straight line.