Water in Tub - More Graphs

Name: _____ANSWER KEY_____ Date: _____

Instructions:

Given the same scenario that you worked on in class, create the following graphs. Note that you will need to reason about the geometry and other aspects of the situation logically to complete this worksheet. Be sure to use appropriate units, domain intervals, and rates of change in your graphs. You will need to report on the units used in each problem. You should also be noting them on the axes of the graph.

Scenario: *Tina runs water for a bath in a straight-sided, right-angled bathtub with separate knobs for hot and cold water. She opens up both knobs so that both are going full stream. She shuts off the water and disrobes. She steps in, sits down, lies back, and decides the water is too hot. So, she jumps out and runs only the cold water knob for a bit. Tina gets back in, bathes, and relaxes. While in the water, she notices it starts to cool off. So, she runs the hot knob only at a low rate for a little while. She relaxes some more then gets out and drains the tub. From the point at which she first turned on the water to the point at which the last of the water drained out of the tub, it took Tina 25 minutes to complete her bath.*

1. Graph the volume of water in the tub as a function of time. Label your graph appropriately.
    Units used for input variable: minutes are the most likely units, but hours could be used
    Units used for output variable:
    inches or cm are the most likely units, but other units for length are possible

    Various graphs are possible.

2. Graph the temperature of the water in the tub as a function of time. Label your graph appropriately.

Units used for input variable: minutes are the most likely units, but hours could be used

Units used for output variable: either ℃ or ℉ would work

Various graphs are possible.

3. Graph the volume of water in the tub as a function of the height of water in the tub. Label your graph appropriately.

Units used for input variable: inches or cm are most likely, but other units for length are possible

Units used for output variable:

gallons or liters are most likely, but others units for liquid volumes are possible

Various graphs are possible.