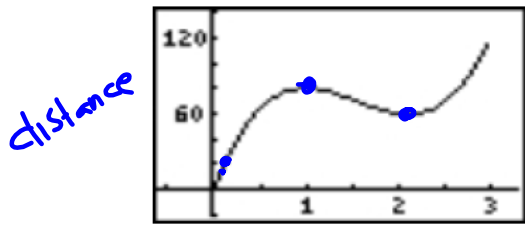


3. Suppose the distance vs. time graph for my trip from Denver to Cheyenne looks like the curve shown below.



What does this graph indicate about my trip? *time*

*wrong turn
detour*

The velocity vs. time graph is now a bit more complicated! Are there any times during the trip when my velocity is zero?

Yes 1 + 2 hours

Is it possible for the velocity to be negative? Explain.

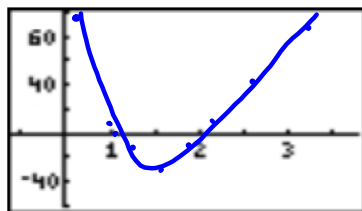
Yes

What is true about the graph when I am traveling the fastest?

Steeper the graph

What is true about the graph when I am traveling the fastest?

Use the results of the above questions to attempt to graph a velocity vs. time graph below.



How could this graph be used to find the total distance traveled for the 3 hour, 120 mile trip?

4. What type of function does the distance vs. time graph in problem 3, appear to be? Cubic

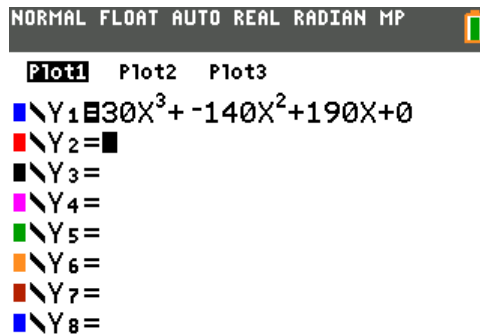
The graph appears to contain the ordered pairs $(0, 0)$, $(1, 80)$, $(2, 60)$, $(3, 120)$

Enter these ordered pairs in the Statistics Editor of your calculator, and create a scatterplot.

Perform a cubic regression on the data (from STAT, CALC, 6:CubicReg) to find the function $D(t)$, which models my position at any time t . Record the regression equation below and graph it to see how it fits the data.

$$D(t) = 30t^3 - 140t^2 + 190t$$

Does the graph of this function look similar to the graph given in problem 3? _____



5. Use the distance vs. time function to answer the following.

a. How far from my starting point am I after 1.5 hours? 71.25 miles

b. How could I calculate the average rate of change of my position/distance with respect to time during the first hour of my trip? Calculate this value.

$$(0, 0) \quad (1, 80) \quad \frac{D(1) - D(0)}{1 - 0} = \frac{80 - 0}{1 - 0} = 80 \text{ mph}$$

How else could you describe this value? _____

c. What was my average velocity over the second hour of the trip? -20 mph

$$(1, 80) \quad (2, 60) \quad \frac{60 - 80}{2 - 1} = -20$$

d. What was my average velocity from $t = 2.2$ to $t = 2.8$ hours?

$$(t, D(t))$$

$$(2.2, D(2.2)) \quad (2.8, D(2.8))$$

$$\frac{D(2.8) - D(2.2)}{2.8 - 2.2}$$

