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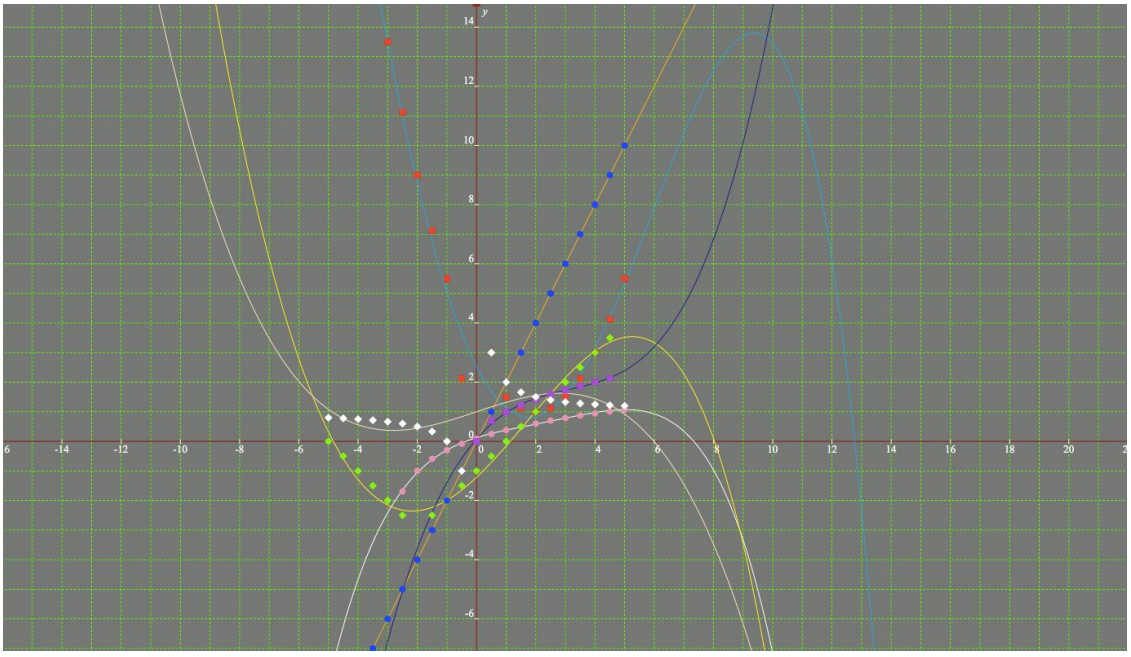
Second Partial Project

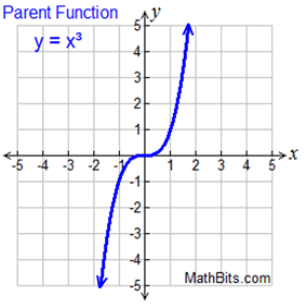


INTRODUCTION

All **position**, **velocity**, and **acceleration** describe the motion of an object. **Position** on the graph is given as a function of x with time, x(t). The **velocity** of an object is found by taking the **derivative** of the **position function**: v(t) = x´(t) . The **acceleration** of an object is equal to the **derivative** of its **velocity :** a(t) = v´(t) = x´´(t) .

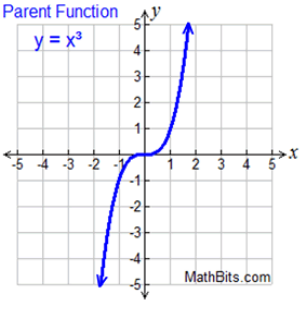
f(t)= -0.0027x^4 + 0.0246x^3 - 0.08x^2 + 0.3116x + 0.1244 (cubic function)
velocity: -0.0108x^3 + 0.0738x^2 - 0.16x + 0.3116
acceleration: -0.0324x^2 + 0.1476x - 0.16

y= x^3



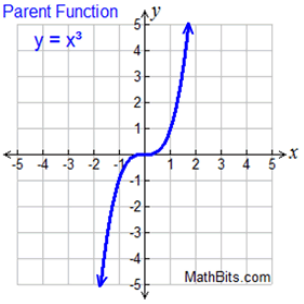
g(t)=y = -0.0026x^4 - 0.0013x^3 + 0.5797x^2 - 1.9746x + 2.5213 (cubic function)
velocity: -0.0104x^3 - 0.0039x^2 + 1.1594x - 1.9746
acceleration: -0.0312x^2 - 0.0078x + 1.1594

y= x^3



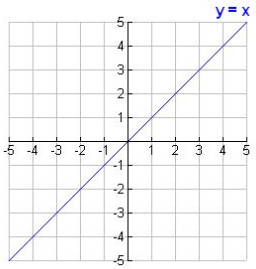
h(t)=y = -0.0006x^4 - 0.0249x^3 + 0.1403x^2 + 0.9417x - 1.2137 (cubic function)
velocity:-0.0024x^3 - 0.0747x^2 + 0.2806x + 0.9417
acceleration: -0.0072x^2 - 0.1494x + 0.2806

y= x^3



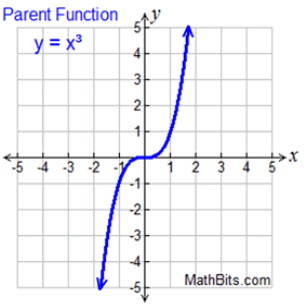
f(t)=y = 2.0x (linear function)
velocity: 2
acceleration: 0

y=x



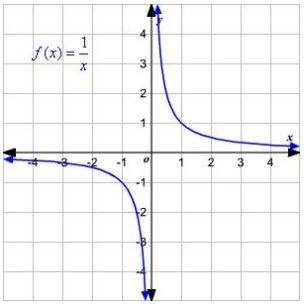
g(t)=y = 0.0003x^4 + 0.0292x^3 - 0.2914x^2 + 1.1523x + 0.0787 (cubic function)
velocity: 0.0012x^3 + 0.0876x^2 - 0.5828x + 1.1523
acceleration: 0.0036x^2 + 0.1752x - 0.5825

y=x^3



h(t)=y = 6.3942*10^-6x^4 - 0.014x^3 - 0.0001x^2 + 0.3339x + 0.9994 (rational function)
velocity: 0.000000156x^3- 0.042x^2 - 0.0002x + 0.3339
acceleration: 0.00000468x^2 - 0.084x - 0.0002

y= 1 / x



Sofía
In conclusion you can say that with data given and using a grapher you may get the graphs needed and based on the graph you get the equation, and once you get the equation of the graph you can start to derive the equation to get what is asked for. Velocity and acceleration are a derivate from position so based on what's asked you can derivate it once or twice.

Karen:
We used the software graphmatica and with the table of values that was given to us we plot the values in it and automatically the software drop us the graphs with their respective equations.
This equations were useful because we could determine the equations of acceleration and velocity by derivating the given equations.
In this project I put in practice my knowledge about derivatives and also how to differentiate and classify certain types of graphs with their respective transformations.

Daniela:
I think this kind of projects are so cool due to the fact that are experimental projects, this means we give a use to our previously obtained knowledge. The fact that this project mixes mathematics and physics is great. We actually put on practice our previous lessons and it is a way of letting them stick to our brain, or in other words, learn them in an easily way.
This project helped us use our knowledge on derivating, using a graphing machine, using formulas, and analyzing and classifying graphs. As well as putting in practice our teamwork skills and analyzing together.