Velocity Recap

Velocity is the slope on a d-t graph (steepness)
- the slope tells you how fast and what direction (+/-)

Speed: $V = \frac{\Delta d}{\Delta t}$ $\vec{V} = \frac{\Delta \vec{d}}{\Delta t}$ ← velocity

Constant velocity → slope is constant (find it anywhere)
average velocity → slope between two points
instantaneous velocity → slope of the tangent

Converting from $\frac{km}{h}$ to $\frac{m}{s}$:

$$x\,\frac{m}{s} = 72\,\frac{km}{h}\left(\frac{1000\,m}{1\,km}\right)\left(\frac{1\,h}{3600\,s}\right)$$

what I want to know

start with

$$x\,\frac{m}{s} = 72\left(\frac{1000}{3600}\right)\frac{m}{s}$$

$$x\,\frac{m}{s} = 20\,m/s$$

11. $v = 50\,km/h \Rightarrow$ $x\,\frac{m}{s} = 50\frac{km}{h}\left(\frac{1000m}{1km}\right)\left(\frac{1h}{3600s}\right)$

$\Delta d = 5m$

$\Delta t = ??$

$x\,\frac{m}{s} \doteq 13.889\,m/s$

$$v = \frac{\Delta d}{\Delta t}$$

$$v\Delta t = \Delta d \quad /v$$

$$\Delta t = \frac{\Delta d}{v}$$

$$\Delta t = \frac{5m}{13.889\,m/s}$$

$$\Delta t \doteq 0.4s$$

use unrounded value

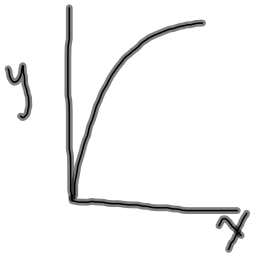
Quiz

Modify Data and get an equation for the linear graph.

POWER

$y \propto x^n$

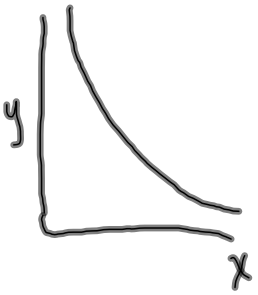
modify using x^n



ROOT

$y \propto \sqrt[n]{x}$

modify using $\sqrt[n]{x}$

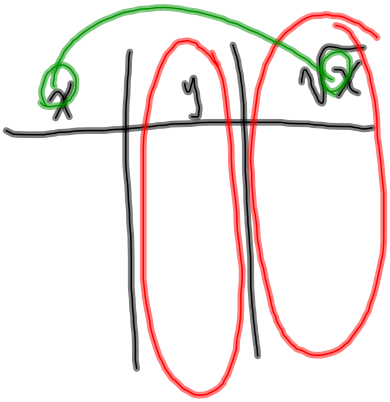


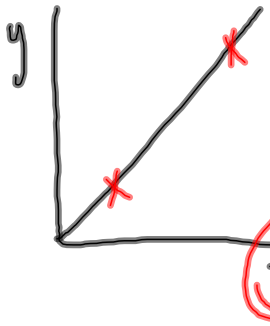
INVERSE

$y \propto \frac{1}{x^n}$

modify using $\frac{1}{x^n}$

choose: x^3, $\sqrt{x}$, $\frac{1}{x^2}$





Find slope + show work
Find y-int + show work

write the equation

$y = mx + b$

$y = m\sqrt{x} + b$ then insert mod: $\sqrt{x}$

Velocity Review Sheet

14, 17, 19, 20, 21

Velocity Assignment (due Wed ⇐> Oct 6th)

- watch sds, units and directions
- do on loogeleaf
- Remember: $V_{ave} \neq \frac{V_1 + V_2 + V_3 + \ldots V_n}{n}$

overall displacement

$V_{ave} = \frac{\Delta d}{\Delta t}$ or $V_{ave} = \frac{\Delta \vec{d}}{\Delta t}$

overall distance

overall time

overall time

- Diagrams might be useful
- Look @ MP 55 to see an example of drawing a tangent
- Don't forget the BACK!
- Do not round until the final answer! ☺
- There should be "things" drawn on the graph

Sep 29-12:25 PM