

Velocity Recap

Velocity is the slope on a d-t graph
 - the slope tells you how fast (steepness)
 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 $\frac{\text{km}}{\text{h}}$ to $\frac{\text{m}}{\text{s}}$:

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

↑ what I want to know
↑ start with

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

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

11. $v = 50 \text{ km/h} \Rightarrow x \frac{\text{m}}{\text{s}} = 50 \frac{\text{km}}{\text{h}} \left(\frac{1000 \text{ m}}{1 \text{ km}} \right) \left(\frac{1 \text{ h}}{3600 \text{ s}} \right)$
 $\Delta d = 5 \text{ m}$
 $\Delta t = ??$

$x \frac{\text{m}}{\text{s}} = 13.889 \text{ m/s}$

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

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

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

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

$$\Delta t = 0.4 \text{ s}$$

use unrounded value

Quiz

Modify Data and get an equation for the linear graph.



POWER

$$y \propto x^n$$

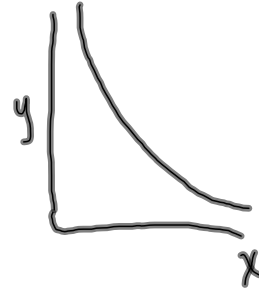
modify using x^n



ROOT

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

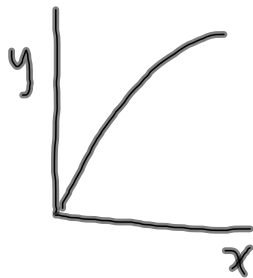
modify using $\sqrt[n]{x}$



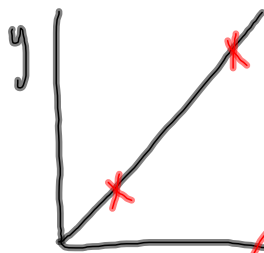
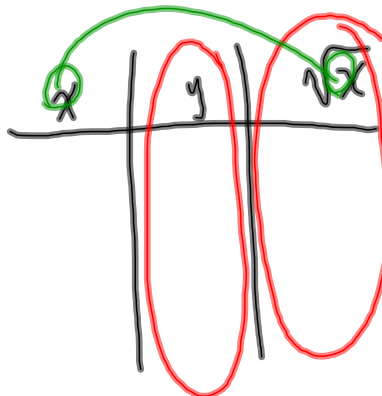
INVERSE

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

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



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



\sqrt{x}

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

write the equation

$$y = mx + b$$

$$y = m\sqrt{x} + b$$

↑ insert the mod: x

Velocity Review Sheet

14, 17, 19, 20, 21

Velocity Assignment (due Wed \leftrightarrow Oct 6th)

- watch sds, units and directions
- do on looseleaf

Remember:

$$V_{ave} \neq V_1 + V_2 + V_3 + \dots + V_n$$

$$V_{ave} = \frac{sd}{\Delta t} \quad \text{or} \quad V_{ave} = \frac{\Delta d}{\Delta t}$$

overall distance overall time overall displacement 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