Proportionality sheet.

7. $R \propto \frac{L}{d^2}$ proportionality statement

$R = \frac{kL}{d^2}$ general equation

$Rd^2 = kL$

$k = \frac{Rd^2}{L}$ solve for k

$k = \frac{(9\Omega)(0.125cm)^2}{16m}$

$k = 0.00879 \frac{\Omega \cdot cm^2}{m}$ ← k has units.

$R = \frac{\left(0.00879 \frac{\Omega \cdot cm^2}{m}\right) L}{d^2}$

$R = \frac{\left(0.00879 \frac{\Omega \cdot cm^2}{m}\right)(25m)}{(0.250cm)^2}$

$\boxed{R = 3.5\Omega}$

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Graphical Analysis of Data

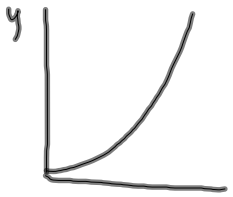
LINEAR

$y \propto x$

$y = kx$

$(y = mx + b)$

A plot y vs x is linear
slope is k
y-int is zero



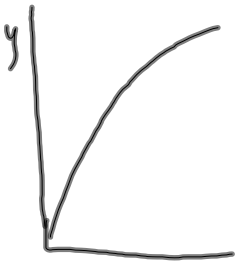
POWER CURVE

$y \propto x^n$

$y = kx^n$

$(y = mx + b)$

A plot of y vs x^n will be linear
Slope is k
y-int is zero



ROOT CURVE

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

$y = k\sqrt[n]{x}$

$(y = mx + b)$

A plot of y vs $\sqrt[n]{x}$ will be linear
Slope is k
y-int is zero

INVERSE CURVE

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

$y = k\left(\frac{1}{x^n}\right)$

$(y = mx + b)$

A plot of y vs $\frac{1}{x^n}$ will be linear
slope is k
y-int is zero

Sep 15-9:42 AM