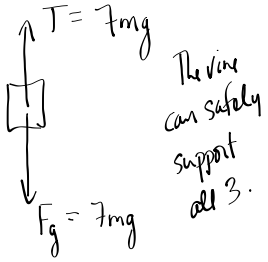
Kinematics + Dynamics Review

26. $m_c = m$

$m_j = 2m$

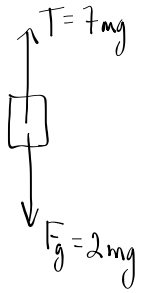
$m_t = 2(2m) = 4m$

TOTAL = $7m$



The vine can safely support all 3.

Just Jane



$\vec{F}_{net} = m\vec{a}$

$T - F_g = m_j a$

$7mg - 2mg = 2m\,a$

$5mg = 2m\,a$

$a = \frac{5}{2}g$

$V_i = 0$

$\Delta d = 60\,m$

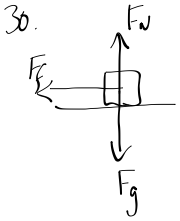
$a = \frac{5}{2}g$

$\Delta t = ?$

$\Delta d = \cancel{V_i \Delta t}^{0} + \frac{1}{2}a(\Delta t)^2$

$\Delta d = \frac{1}{2}a(\Delta t)^2$

30.



$\vec{F}_{net} = m\vec{a}$

$-F_f = ma$

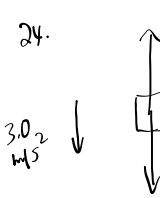
$-\mu F_N = ma$

$-\mu F_g = ma$

$-\mu \cancel{mg} = \cancel{m}a$

$a = -\mu g$

24.



$\vec{F}_{net} = m\vec{a}$

$F_{scale} - F_g = ma$

$F_{scale} = ma + F_g$

$F_{scale} = (80kg)(-3.0m/s^2) + 784.8N$

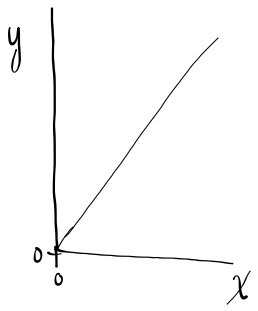
$F_{scale} = -240N + 784.8N$

$F_{scale} = 544.8N$

$5.4 \times 10^2\,N$

apparent weight (feel like)

Graphical Analysis of Data

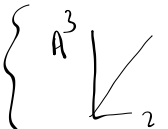


Linear graph of y vs x and with a y-intercept of zero tells you that there is a direct proportionality between y an x.

$y \propto x$

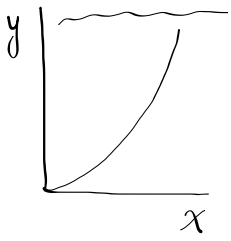
$y = kx$

$(y = mx + b)$



$A^3 \propto B^2$

Power Curve



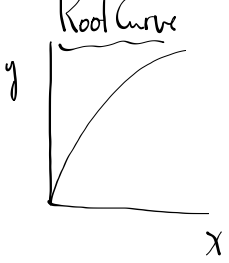
$y \propto x^n$

$y = kx^n$

$(y = mx + b)$

A graph of y vs x^n will be linear with a slope of k and y-intercept of zero

Root Curve



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

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

$(y = mx + b)$

A graph of y vs $\sqrt[n]{x}$ will be linear with a slope of k and a y-intercept of zero.

Inverse Curve

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

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

$(y = mx + b)$

A graph of y vs $\frac{1}{x}$ will be linear with a slope of k and y-interupt of zero.