7.1 Direct Variation, Slope and Tangent

Direct Variation

y varies directly with x if $y = kx$ or $\frac{y}{x} = k$ where k is the variation constant

find k when $y = 8$ $x = 2$ then find y when $x = \frac{3}{4}$

$y = kx$

$\frac{8}{2} = \frac{k \cdot 2}{2}$

$4 = k$

$y = k \cdot x$

$y = 4 \cdot \frac{3}{4}$

$y = \frac{4}{1} \cdot \frac{3}{4} = 3$

find k when $y = 4$ $x = 32$ then find y when $x = 96$

$\frac{4}{32} = \frac{k \cdot 32}{32}$

$\frac{1}{8} = k$

$y = \frac{1}{8} \cdot 96$

$y = 12$

Slope $\frac{\text{rise}}{\text{run}}$

$y = kx$ (k = slope)

$y = mx + b$

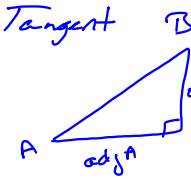
Slope Formula

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $(2, 5)$ $(-3, 7)$

$m = \frac{7-5}{-3-2} = \frac{2}{-5} = -\frac{2}{5}$ $(-10, 5)$ $(7, 12)$

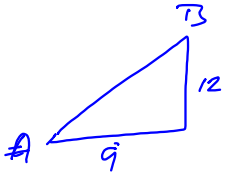
$m = \frac{12-5}{7-(-10)} = \frac{7}{11}$

Tangent



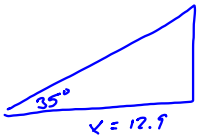
$\tan A = \frac{opp}{adj}$

$tangent = \frac{opposite}{adjacent}$



$\tan A = \frac{12}{9} = \frac{4}{3}$

$\tan B = \frac{9}{12} = \frac{3}{4}$



$x\ (\tan 35 = \frac{9}{x})$

$\frac{x \tan 35}{\tan 35} = \frac{9}{\tan 35}$

$x = \frac{9}{\tan 35}$

$x = 12.9$