# "Finding K"

$P_1(x_1, y_1)$ $P_2(x_2, y_2)$

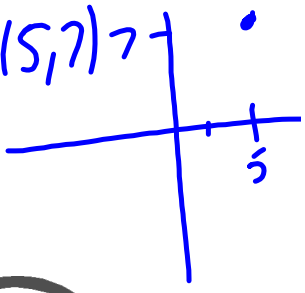
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

A line passes through the points (2, k) and (5,7).
If the slope is $\frac{2}{3}$, what is the value of k?

Point 1 $x_1$ $y_1$ $-9$ $x_2$ $y_2$

$m = \frac{2}{3}$ $\quad m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad (2,-9)\ (5,7)$

$\therefore \frac{7-k}{3} = \frac{2}{3}$ $\quad \frac{2}{3} = \frac{7-K}{5-2}$




foil

$2 \times (5-2) = 3 \times (-7-k)$

$2 \times (3) = -21 - 3k$

$21 + 6 = -21 - 3k + 21$

$\frac{27}{-3} = \frac{-3k}{-3}$

$-9 = k$

$k = -9$

A line passes through the points (-7,-8) and (k,-4).
If the slope is -4/3, what is the value of k?

$(-7,-8)$ $(-10,-4)$

$x_1\ y_1$ $x_2\ y_2$

$m = -\frac{4}{3}$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$-\frac{4}{3} = \frac{-4-(-8)}{k-(-7)}$$

$$-4(k-(-7)) = 3(-4-(-8))$$

$$-4(k+7) = 3(-4+8)$$

$$-4k-28 = 3(4)$$

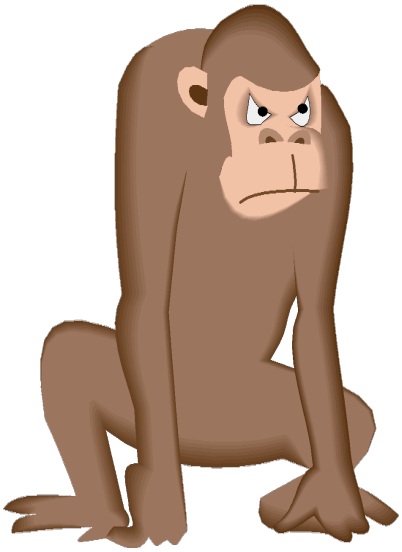
$$-4k-28 = 12 \quad \times 28$$

$$-4k = 40$$

$$\frac{-4k}{-4} = \frac{40}{-4}$$

$$k = -10$$

A line passes through the points (-7,-8) and (k,-4). If the slope is $\frac{-4}{3}$, what is the value of k?



A line passes through the points (2, k) and (k,-3). If the slope is -2 , what is the value of k?

$x_1$ $y_1$ $x_2$ $y_2$

$m = -\frac{2}{1}$ $\quad m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad (2,7)$ $\quad (7,-3)$

$-2 = \frac{-3-k}{k-2}$

$1(k-2)$

$-2(k-2) = 1(-3-1k)$

$-2k+4 = -3-k$

$-2k+1k = -3-4$

$\frac{-1k}{-1} = \frac{-7}{-1}$

$k = 7$

Work backwards to check work

(10,11) (5,8)

$x_1$ $y_1$ $x_2$ $y_2$

A line passes through the points (2k , 11) and (k , k+3). If the slope is $\frac{3}{5}$, what is the value of k?

$m = \frac{3}{5}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{3}{5} = \frac{(k+3) - 11}{k - 2k}$

$5 \times \frac{(k+3)-11}{k-8} = 3(1k-2k)$

$5(k-8) = 3(-1k)$

$5k - 40 = -3k + 48$

$5k + 3k = 40$

$\frac{8k}{8} = \frac{40}{8}$

$k = 5$

$x_1 = 2k$

$2(5)$

$= 10$

$x_2 = k = 5$

$y_2 = k + 3$

$= 5 + 3$

$= 8$

A line passes through the points (2, k) and (5,7).
If the slope is $\frac{2}{3}$, what is the value of k?

Homework (finish the sheet)

(1) $(-19,-12)$ $(-16,k)$ $m=\frac{2}{3}$

$m=\frac{y_2-y_1}{x_2-x_1}$

$-\frac{2}{3}=-\frac{2}{3}$

$=\frac{2}{-3}$

$\frac{-2}{3}=\frac{k-(-12)}{-16-(-19)}$

$-2(-16-(-19))=3(k-(-12))$

$-2(-16+19)=3(k+12)$

$-2(3)=3k+36$

$-36-6=3k+36-36$

$\frac{-42}{3}=\frac{3k}{3}$

$-14=k$

$k=-14$