Check-up Time!!!

Determine the equation of each of the following lines...

(1) Through (-4,2) and (-3,5) (Express in General Form) $3x - y + 14 = 0$

$m = \frac{5-2}{-3-(-4)}$

$m = \frac{3}{1}$

$m = 3$

$y - y_1 = m(x - x_1)$

$y - 5 = 3(x + 3)$

$y - 5 = 3x + 9$

$0 = 3x - y + 9 + 5$

$0 = 3x - y + 14$

(2) Through (-5,-3) and perpendicular to the line 3x - 4y + 8 = 0 (Express in slope y-int form) $y = -\frac{4}{3}x - \frac{29}{3}$

$y - y_1 = m(x - x_1)$

$y + 3 = -\frac{4}{3}(x + 5)$

$3y + 9 = -4(x + 5)$

$3y = -4x - 20 - 9$

$\frac{3y}{3} = \frac{-4x}{3} - \frac{29}{3}$

$y = -\frac{4}{3}x - \frac{29}{3}$

$\frac{3x}{4} + \frac{8}{4} = \frac{4y}{4}$

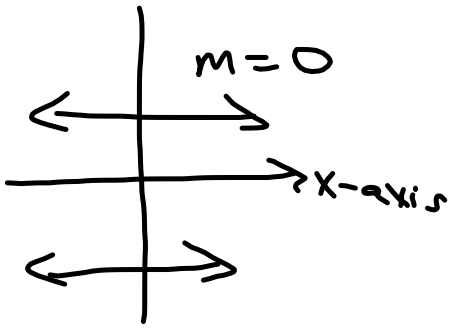
$y = \frac{3}{4}x + 2$

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

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

Horizontal Line

(3) Parallel to the x-axis and passing through (7, -2) (Express in General Form)



$y+2=0(x-7)$

$y+2=0$

$y+2=0$

$y=-2$

$y+2=0$

(4) Having the same x-intercept as the line y= - 5x+15 and the same y-intercept as the line 3x - 2y + 6 = 0 (Express in slope y-int form)

$y=-x+3$

$0=-5x+15$

$\frac{-15}{-5}=\frac{-5x}{-5}$

$3=x$

$(3,0)$

$0-2y+6=0$

$\frac{-2y}{-2}=\frac{-6}{-2}$

$y=3$

$(0,3)$

$m=\frac{3-0}{0-3}$

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

$m=-1$

$b=3$

$(3,0)$

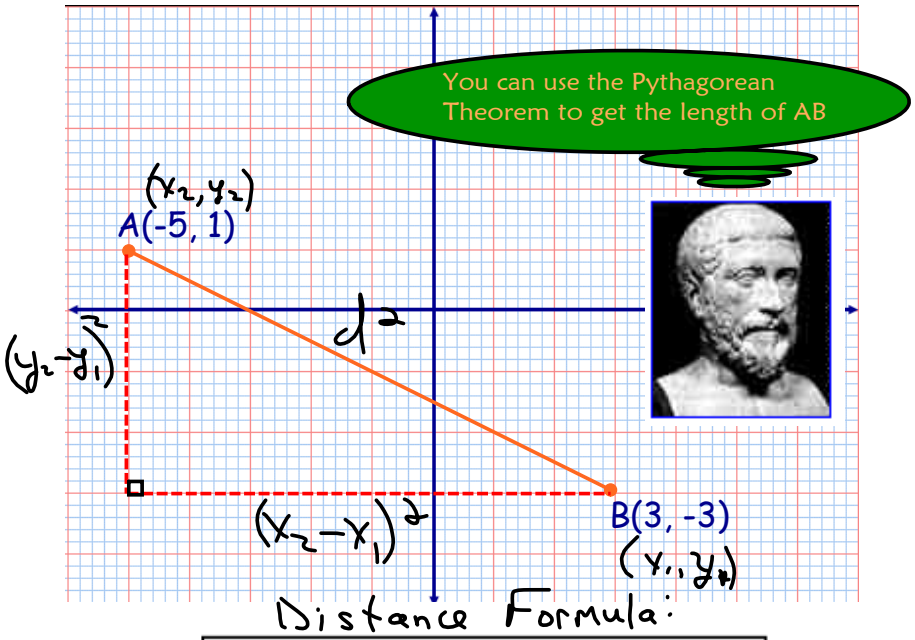
$y-0=-1(x-3)$

$y=-x+3$

$y=mx+b$

$y=-1x+3$

Distance between two points



Distance Formula:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Review of Operations with Radicals

Simplifying

Examples...

#1. Use the distance formula to show that the triangle with vertices A(-3, 1); B(1, 7) & C(5, 1) is iscosceles.

$d_{AB} = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d_{AB} = \sqrt{(-3-1)^2+(1-7)^2}$

$d_{AB} = \sqrt{(-4)^2+(-6)^2}$

$d_{AB} = \sqrt{16+36}$

$d_{AB} = \sqrt{52}$

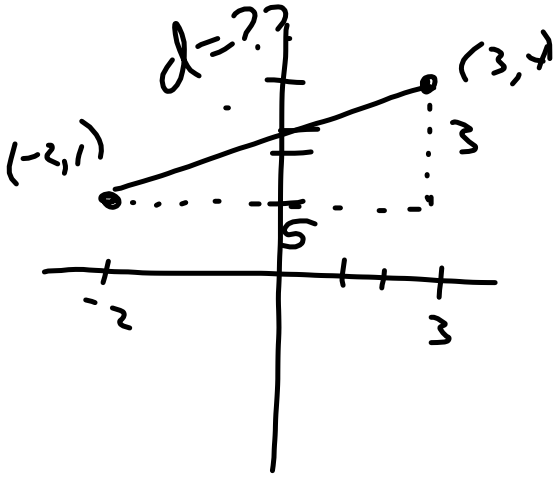
$d_{BC} = \sqrt{(1-5)^2+(7-1)^2}$

$d_{BC} = \sqrt{(-4)^2+(6)^2}$

$d_{BC} = \sqrt{16+36}$

$d_{BC} = \sqrt{52}$

$\Longleftrightarrow$ same length



Pythagoras

$5^2 + 3^2 = d^2$

$25 + 9 = d^2$

$\sqrt{34} = \sqrt{d^2}$

$\sqrt{34} = d$

#2.Find the distance between A(-2, 1) & B(8, 3)

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$d=\sqrt{(8-(-2))^2+(3-1)^2}$$

$$d=\sqrt{10^2+2^2}$$

$$d=\sqrt{104}$$

#3. Show that the points (5, -1); (2, 8) & (-2, 0) lie on a circle whose center is (2, 3)