

September 19th, 2007

Getting Equations from two points

$$y = m(x-p) + q$$

Give the equation of linear line passing through
(4, 6) + (10, -5)

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{6 - (-5)}{4 - 10} = \frac{11}{-6}$$

$$y = m(x-p) + q$$

$$y = -\frac{11}{6}(x-4) + 6$$

$$y = -\frac{11}{6}x + \frac{44}{6} + 6$$

$$y = -\frac{11}{6}x + \frac{80}{6}$$

$$(4) 6 = (-\frac{11}{6}x)6 + (\frac{80}{6})6$$

$$6y = -11x + 80$$

$$11x + 6y - 80 = 0$$

Ex 1: Give the equation of linear line passing
through (-3, 4) + (-5, 7)

$$m = \frac{4-7}{-3-(-5)} = \frac{-3}{2}$$

$$y = m(x-p) + q$$

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

$$y = -\frac{3}{2}x - \frac{9}{2} + 4$$

$$y = -\frac{3}{2}x - \frac{1}{2}$$

$$2y = -3x - 1$$

$$3x + 2y + 1 = 0$$

Ex 2: Give the equation of linear line passing through $(\frac{-1}{2}, \frac{-2}{3}) + (\frac{-3}{7}, \frac{-2}{9})$

$$m = \frac{-\frac{2}{3} - \frac{-2}{9}}{-\frac{1}{2} - \frac{-3}{7}} = \frac{-\frac{4}{9}}{-\frac{1}{14}} = \frac{56}{9}$$

$$\begin{aligned}y &= m(x-p) + q \\y &= \frac{56}{9}(x + \frac{1}{2}) - \frac{2}{3} \\y &= \frac{56}{9}x + \frac{28}{9} - \frac{2}{3} \\y &= \frac{56}{9}x + \frac{22}{9} \\9y &= 56x + 22\end{aligned}$$

$$56x - 9y + 22 = 0$$