

### Quiz 4

**Question 1.** (5 marks) Find the equation of the right-bisector (perpendicular to and through the midpoint of) the line segment between  $(-2, 1)$  and  $(3, 5)$ .

MIDPOINT:  $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = \left(\frac{-2+3}{2}, \frac{1+5}{2}\right) = \left(\frac{1}{2}, 3\right)$

SLOPE:  $m_1 = \frac{y_2-y_1}{x_2-x_1} = \frac{5-1}{3-(-2)} = \frac{4}{5}$

$\therefore m_1 \cdot m_2 = -1$   
 $\frac{4}{5} m_2 = -1$   
 $m_2 = -\frac{5}{4}$

SLOPE-INTERCEPT FORM

$y = mx + b$

$3 = -\frac{5}{4}\left(\frac{1}{2}\right) + b$

$3 = -\frac{5}{8} + b \Rightarrow 3 + \frac{5}{8} = b \Rightarrow \frac{29}{8} = b$

POINT-SLOPE FORM

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

$y - 3 = -\frac{5}{4}\left(x - \frac{1}{2}\right)$

OR

**Question 2.** (5 marks) Graph the linear inequality (clearly show your work):

$\frac{1}{3}x - \frac{1}{4}y > 1$

$y = -\frac{5}{4}x + \frac{29}{8}$

BOUNDARY LINE:  $\frac{1}{3}x - \frac{1}{4}y = 1$

x-int:  $y = 0$

$\frac{1}{3}x - \frac{1}{4}(0) = 1$

$x = 3$

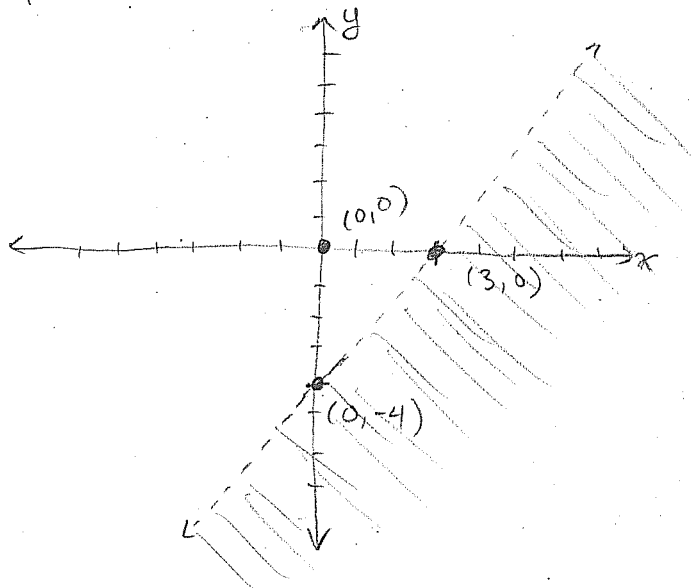
$\therefore (3, 0)$

y-int:  $x = 0$

$\frac{1}{3}(0) - \frac{1}{4}y = 1$

$y = -4$

$\therefore (0, -4)$



TEST POINT:  $(0, 0)$

$\frac{1}{3}(0) - \frac{1}{4}(0) > 1$

$0 > 1$

FALSE

(SHADE DOWNWARD)