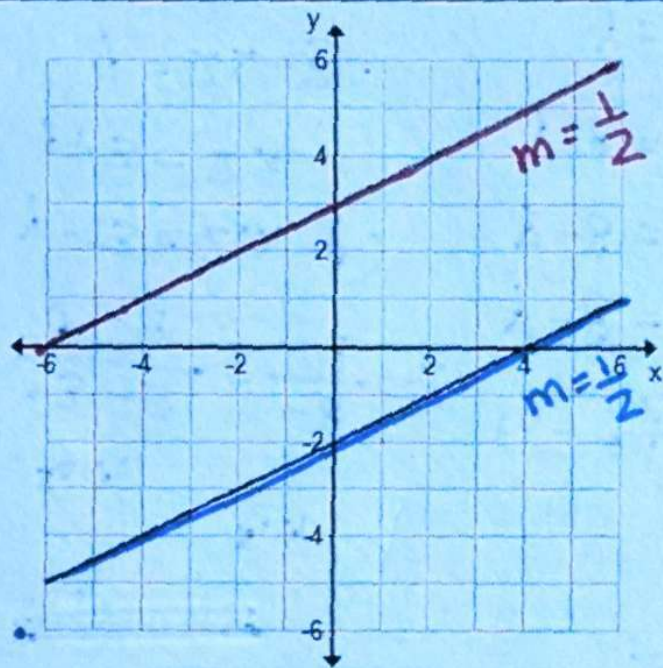
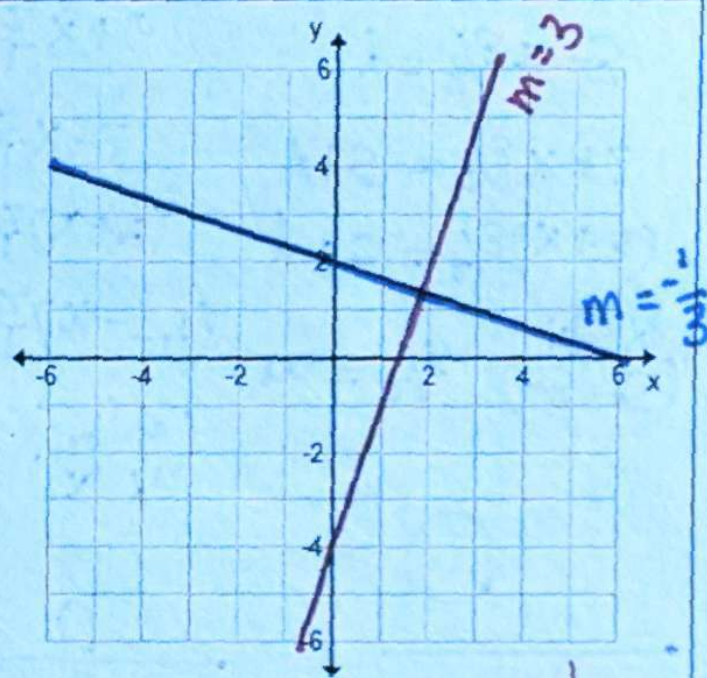


PARALLEL AND PERPENDICULAR LINES



Parallel Lines \parallel



Perpendicular Lines \perp

Same slope

opposite (sign)
Reciprocal (Flip Fraction)

Slope	$\frac{2}{3}$	0	Undefined	1
\parallel Slope	$\frac{2}{3}$	0	Undefined	1
\perp Slope	$-\frac{3}{2}$	Undefined	0	-1

Slope	$(2, 5), (4, 3)$	$y = 3x - 7$	$y = 4$
Parallel	$\frac{\Delta y}{\Delta x} = \frac{3-5}{4-2} = \frac{-2}{2}$ $m = -1$	$m = 3$	$m = 0$
Perpendicular	$m = 1$	$m = -\frac{1}{3}$	Undefined

Solve for y

Determine if each pair of lines if parallel, perpendicular or neither.

<p>a) $x + y = 5$ $x - y = -6$</p> <p>$x + y = 5$ $-y = -x - 6$ $y = -x + 5$ $y = x + 6$ $m = -1$ $m = 1$</p> <p style="text-align: center;">⊥</p>	<p>b) $2x + 3y = 6$ $y = -\frac{2}{3}x - 5$</p> <p>$2x + 3y = 6$ $3y = -2x + 6$ $y = -\frac{2}{3}x + 6$</p> <p style="text-align: center;"> </p>	<p>c) $x = 5$ - Undefined $y = -2$ - 0</p> <p style="text-align: center;">⊥</p>
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Write the linear equation for the line (in slope - intercept form) PARALLEL to the line $y = -\frac{3}{2}x + 6$ and passing through the point $(-3, -3)$.

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

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

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

$$y + 3 = -\frac{3}{2}x - 4.5$$

$$y = -\frac{3}{2}x - 7.5$$

Write the linear equation for the line (in slope - intercept form) PERPENDICULAR to the line passing through $(-3, -2)$ and $(3, -2)$.

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

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

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

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

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

$y = \frac{2}{3}x + 0$

Write the equation of the line, in slope - intercept form that ...

<p>a) ... is parallel to the <u>passes</u> through the points $(4, 5)$ and $(0, -3)$</p> <p>x_1, y_1 x_2, y_2</p> $\frac{-3 - 5}{0 - 4} = \frac{-8}{-4} = 2$ $y - (-3) = 2(x - 0)$ $y + 3 = 2x$ $y = 2x - 3$	<p>b) ... is <u>perpendicular</u> to the line $y = 2x - 3$ and contains the point $(-4, 8)$.</p> <p>x_1, y_1</p> $m = -\frac{1}{2} \quad (-4, 8)$ $y - 8 = -\frac{1}{2}(x - (-4))$ $y - 8 = -\frac{1}{2}(x + 4)$ $y - 8 = -\frac{1}{2}x - 2$ $y = -\frac{1}{2}x + 6$	<p>c) ... is <u>perpendicular</u> to the line with a slope of $-\frac{3}{2}$ and contains the point $(-3, -5)$.</p> <p>x_1, y_1</p> $m = \frac{2}{3} \quad (-3, -5)$ $y + 5 = \frac{2}{3}(x + 3)$ $y + 5 = \frac{2}{3}x + 2$ $y = \frac{2}{3}x - 3$
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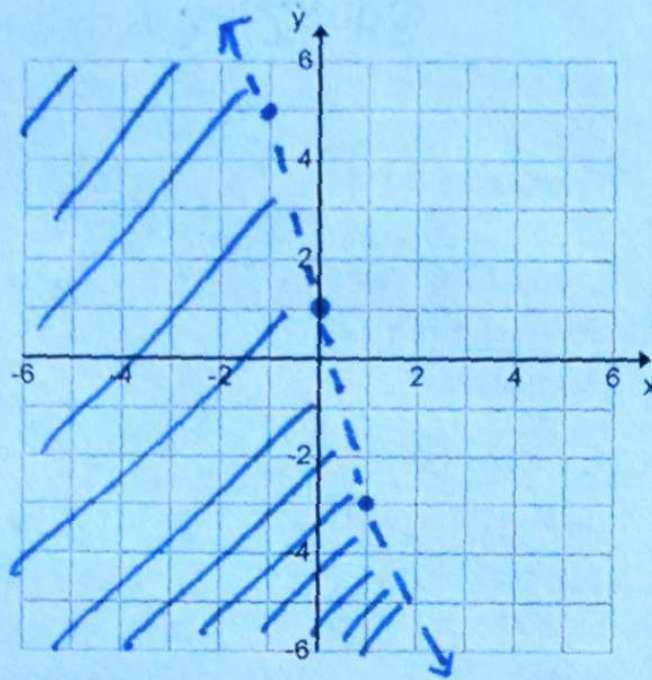
GLUE HERE

LINEAR INEQUALITIES

slope $\frac{-4}{1} \rightarrow$

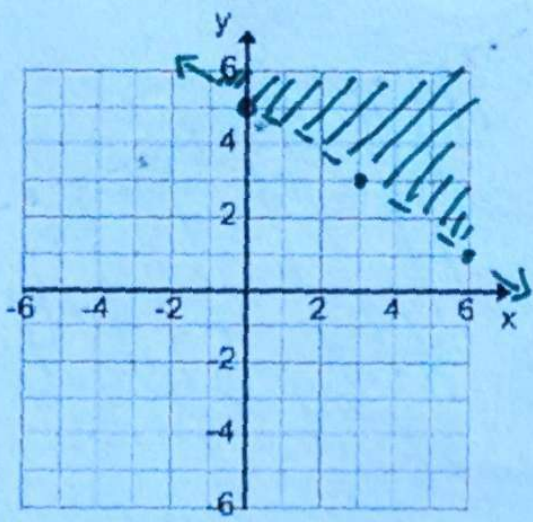
$$y < -4x + 1$$

y-int (0,1)



DASHED LINE $<$ $>$	SHADE ABOVE THE Y-AXIS $y >$ $y \geq$
SOLID LINE \leq \geq	SHADE BELOW THE Y-AXIS $y <$ $y \leq$

1. $y > -\frac{2}{3}x + 5$



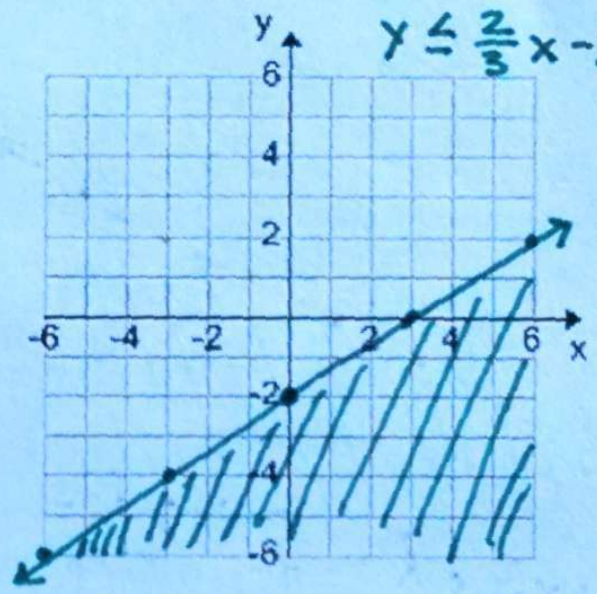
Solve for y

$$2x - 3y \geq 6$$

$$\frac{-3y \geq -2x + 6}{-3} \quad \frac{-2x + 6}{-3}$$

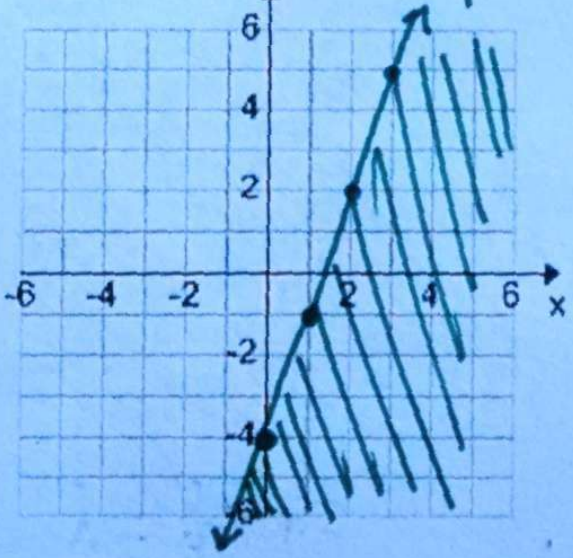
$$y \leq \frac{2}{3}x - 2$$

2. $2x - 3y \geq 6$

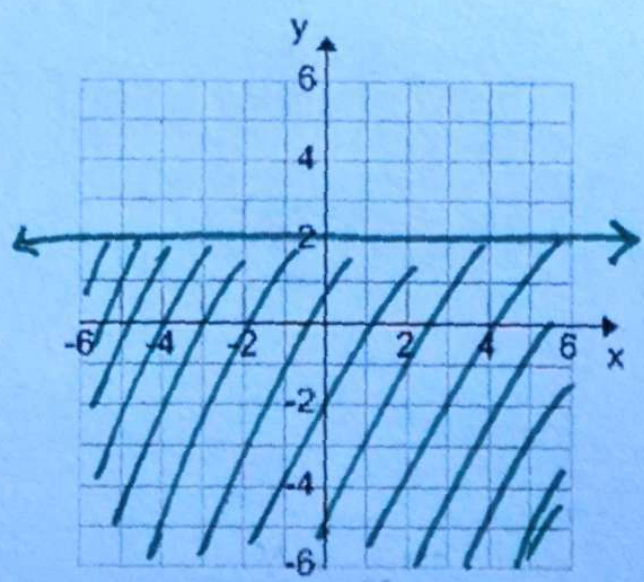


3. $-3x + y \leq -4$

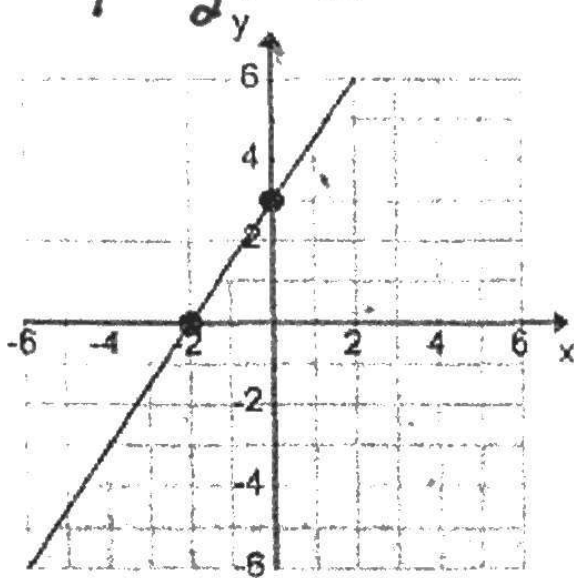
$$+3x \quad +3x \quad y \leq \frac{3}{1}x - 4$$



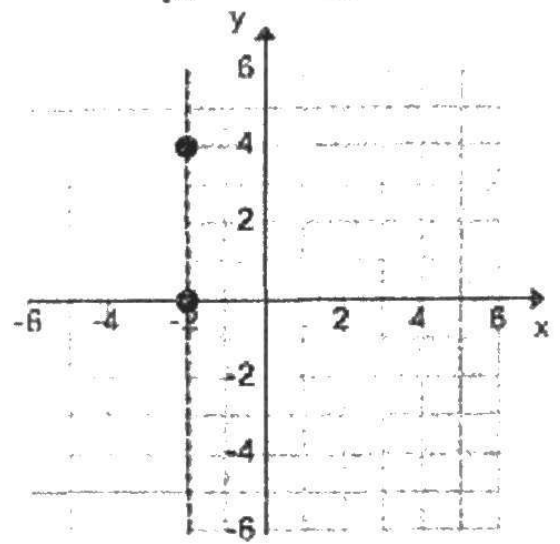
4. $y \leq 2$



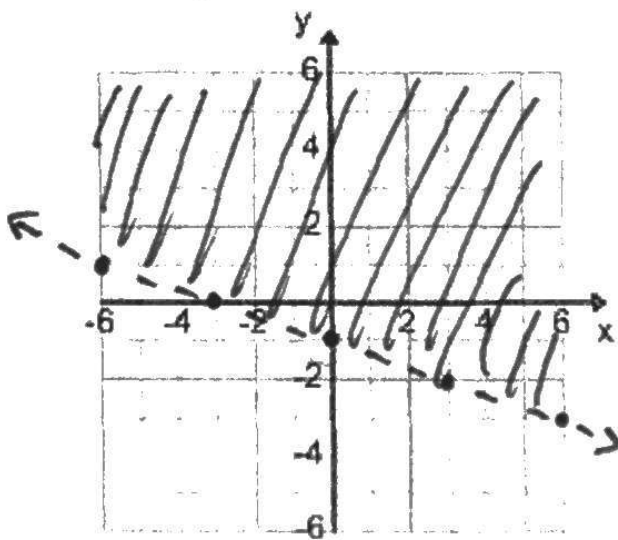
$$y \leq \frac{3}{2}x + 3$$



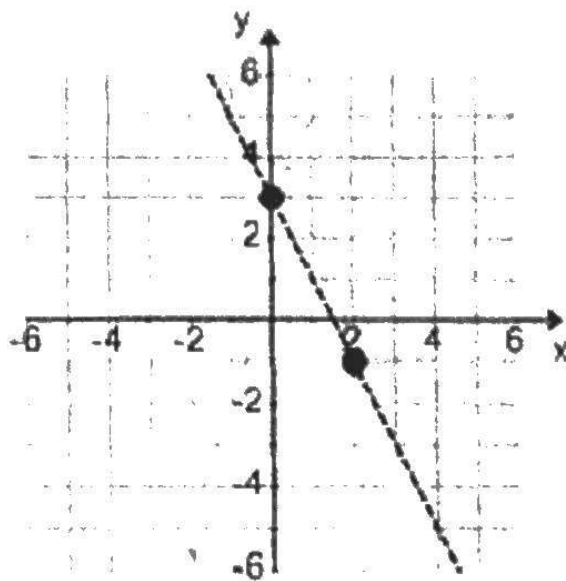
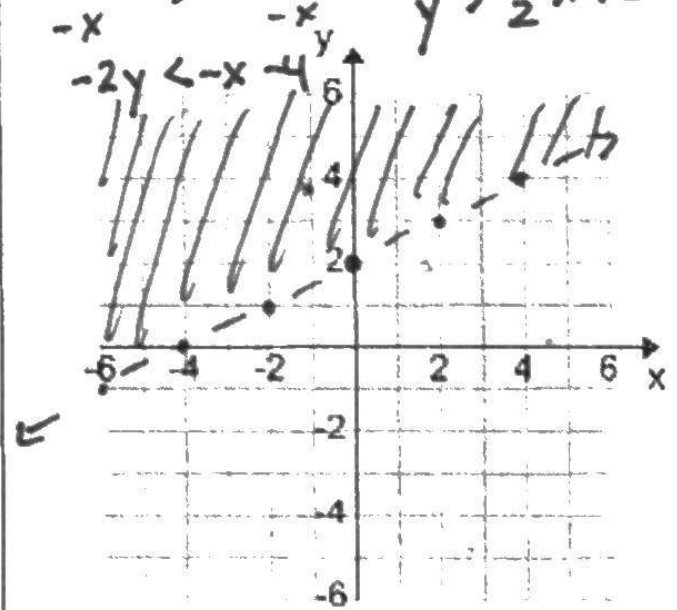
$$x > -2$$



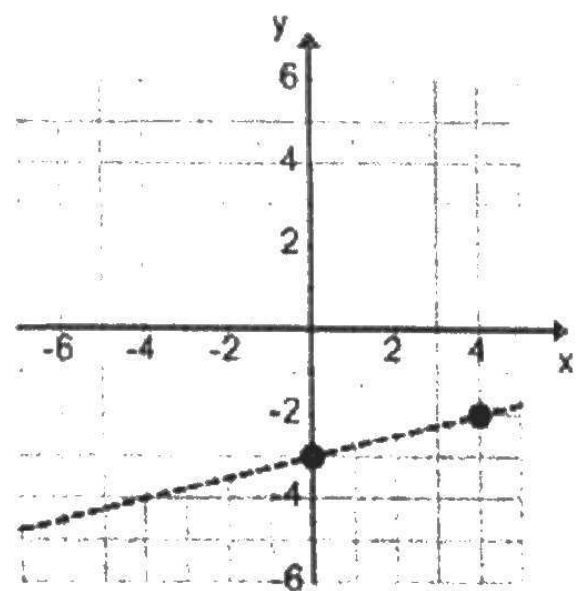
$$1. y > -\frac{1}{3}x - 1$$



$$2. x - 2y < -4$$



$$y > -2x + 3$$



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