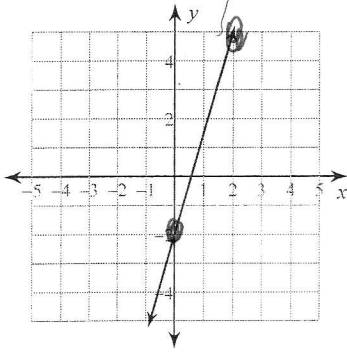Algebra 1

Name_____ ID: 1

Assignment

Date_____ Period_____

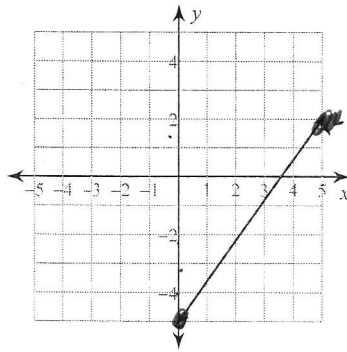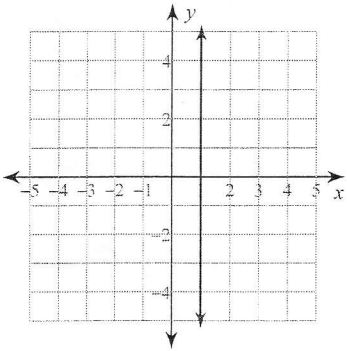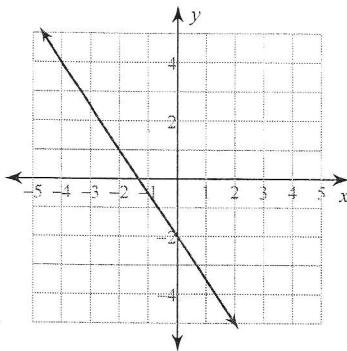**Write the slope-intercept form of the equation of each line.**

1)

2)

$$M = \frac{7}{5}$$

$$b = -5$$

3)

4)

5) $y + 3 = 7(x + 1)$

6) $y - 2 = -\frac{1}{4}(x + 3)$

7) $y + 4 = -(x - 4)$

8) $y + 3 = \frac{1}{3}(x - 3)$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

9) through: $(-5, 0)$, slope $= -\frac{4}{5}$

10) through: $(3, 2)$, slope $= -\frac{1}{3}$

11) through: $(-3, 2)$, slope $= -\frac{6}{5}$

12) through: $(4, 0)$, slope $= -\frac{3}{4}$

Write the slope-intercept form of the equation of the line through the given points.

13) through: $(-5, -3)$ and $(0, 5)$

14) through: $(2, -3)$ and $(2, -4)$

15) through: $(-4, -2)$ and $(3, -4)$

16) through: $(0, 3)$ and $(2, 4)$

17) through: $(5, -4)$ and $(0, 3)$

18) through: $(1, 5)$ and $(2, -1)$

19) through: $(4, -3)$ and $(1, -5)$

20) through: $(5, 4)$ and $(-2, 1)$

I am going to show all three forms
of the equation.

$$y = nx + b \qquad \text{slope - intercept}$$

$$ax + by = c \qquad \text{std. form.}$$

$$y - y_1 = n(x - x_1) \qquad \text{PT slope}$$

(1) $\quad$ Slope $= \dfrac{7}{2} \quad b = -2$

$$\boxed{y = \dfrac{7}{2}x + 2} \rightarrow 2y = 7x + 4$$

$$\boxed{-4 = 7x - 2y}$$

If we use $\left(0, -2\right)$ and $m = \dfrac{7}{2}$

$$\boxed{y + 2 = \dfrac{7}{2}(x - 0)}$$

(2) $\quad m = \dfrac{7}{5} \quad b = -5$

$$\boxed{y = \dfrac{7}{5}x - 5} \qquad 5y = 7x - 25 \rightarrow \boxed{25 = 7x - 5y}$$

If we use $(0, -5)$ and $m = \dfrac{7}{5}$

$$\boxed{y + 5 = \dfrac{7}{5}(x - 0)}$$

③ a vertical line, we can't do much

$$X = 1$$

④ Slope $-\frac{3}{2}$ and $b = -2$

So $\boxed{y = -\frac{3}{2}x - 2}$ → $2y = -3x - 4$

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

If we use $(0, -2)$
and slope $= -\frac{3}{2}$

$$\boxed{y + 2 = -\frac{3}{2}(x - 0)}$$

⑤

$$y + 3 = 7(x + 1)$$

To write in $y = mx + b$ form

$y + 3 = 7x + 7$ → $\boxed{y = 7x + 4}$
$-y - 7 \quad -y - 7$

Std form $\boxed{-4 = 7x - y}$

6

$$y - 2 = -\frac{1}{4}(x + 3)$$

2 becomes
↓

$$y - 2 = -\frac{1}{4}x - \frac{3}{4} \rightarrow \text{ or } y = -\frac{1}{4}x - \frac{3}{4} + \frac{8}{4}$$

$+2 \qquad\qquad +2$

$$\boxed{y = -\frac{1}{4}x + \frac{5}{4}}$$

→ for std form

$$y - 2 = -\frac{1}{4}x - \frac{3}{4} \rightarrow 4y - 8 = -x - 3$$

$+4 \quad +8 \quad +x \quad +8$

$$\boxed{x + 4y = 5}$$

7

$$y + 4 = -(x - 4) \rightarrow y + 4 = -x + 4$$

$$y + 4 = -x + 4 \qquad\qquad -4 \qquad -4$$

$+x \quad -4 \quad +x \quad -4$

Std Form $\boxed{x + y = 0}$

$$\boxed{\begin{array}{c} y = -x + 0 \\ \text{or} \\ y = -x \end{array}}$$

slope intercept,

(8) $y + 3 = \frac{1}{3}(x - 3)$

$y + 3 = \frac{1}{3}x - 1 \rightarrow y + 3 = \frac{1}{3}x - 1$

$\qquad\qquad\qquad\qquad\qquad -3 \qquad\quad -3$

Mult by 3

$\cancel{3y + 9 = x + 3}$

$\cancel{}$

$$\boxed{y = \frac{1}{3}x - 4}$$

slope intercept

$3y + 9 = x - 3$

$-3y \quad +3 \quad -3y + 3$

$$\boxed{12 = x - 3y}$$ std form

(9) $(5, 0) \qquad m = -\frac{4}{5} \qquad\qquad\qquad y = -\frac{4}{5}(x + 5)$

$$\boxed{y - 0 = -\frac{4}{5}(x + 5)} \rightarrow \boxed{y = -\frac{4}{5}x - 4}$$

pt slope

Slope intercept

for std form $\qquad y = -\frac{4}{5}x - 4$ mult by 5

$\qquad\qquad\qquad\qquad 5y = -4x - 20$

$\qquad\qquad\qquad +4x \qquad\qquad +4x$

$$\boxed{4x + 5y = -20}$$

(10) $(3,2)$ $m = -\frac{1}{3}$

PT slope

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

Slope intercept $\quad y - 2 = -\frac{1}{3}(x - 3)$

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

$$+2 \qquad\qquad +2$$

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

Std form $\quad$ mult by 3 $\qquad 3y = -x + 9$

$$x + 3y = 9$$

(11) $(-3, 2)$ $m = -\frac{6}{5}$

PT slope $\quad \boxed{y - 2 = -\frac{6}{5}(x + 3)}$

Slope int $\quad y - 2 = -\frac{6}{5}x - \frac{18}{5} + \frac{10}{5}$

$$+2 \qquad\qquad +2$$

$$y = -\frac{6}{5}x - \frac{8}{5}$$

Std form mult by 5 $\qquad 5y = -6x - 8$

$$6x + 5y = -8$$

(12) $(4, 0)$ $m = -\frac{3}{4}$

$$y - 0 = -\frac{3}{4}(x - 4)$$ Pt Slope

For Slope Intercept

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

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

Std form mult by 4

$$4y = -3x + 12$$
$$+3x \qquad +3x$$

$$3x + 4y = 12$$

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(13) $(-5, -3)$ $(0, 5)$ ~ $b = 5$ because $x = 0$

$$\frac{5 + 3}{0 + 5} \rightarrow \frac{8}{5}$$

$$y = \frac{8}{5}x + 5$$ Slope Intercept

Pt-Slope if we use

$(-5, -3)$ $m = \frac{8}{5}$ $y + 3 = \frac{8}{5}(x + 5)$

Std Form   use $y = \frac{8}{5}x + 5$ mult by 5

$$5y = 8x + 25$$
$$-25 - 5y \qquad -5y - 25$$

$$-25 = 8x - 5y$$

(14) $(2,-3)(2,-4)$

Slope $\dfrac{-4+3}{2-2} \rightarrow \dfrac{-1}{0}$ undefind
vertical line

$\boxed{X=2}$. Done

(15) $(-4-2)(3,-4)$ $\dfrac{-4+2}{3++4} \rightarrow \dfrac{-2}{7}$ Slope

no $y$int given so

Pt Slope

If we use $(-4,-2) \rightarrow \boxed{y+2 = -\dfrac{2}{7}(X+4)}$

P·Slope iNT $\rightarrow$ $y+2 = -\dfrac{2}{7}X - \dfrac{8}{7} - \dfrac{14}{7}$

-2 -2

$\boxed{y = -\dfrac{2}{7}X - \dfrac{22}{7}}$

Std Form   mult by 7 $7y = -2x - 22$

$+2x \qquad +2x$

$\boxed{2x + 7y = -22}$

(16) $(0,3)$ → y-intercept $(2,4)$ → $\frac{4-3}{2-0}$ → $\boxed{\frac{1}{2}}$ Slope

Slope intercept

$$\boxed{y = \frac{1}{2}x + 3}$$

→ Pt Slope

If we use $(2,4)$

$$\boxed{y - 4 = \frac{1}{2}(x-2)}$$

Std form use

$$y = \frac{1}{2}x + 3 \quad \text{mult by 2}$$

$$2y = x + 6 \rightarrow \boxed{-6 = x - 2y}$$

$$-6 \quad -2y \quad -2y - 6$$

_____

(17) $(5,-4)$ $(0,3)$ Slope $= \frac{3+4}{0-5}$ → $\boxed{\frac{7}{-5}}$

"b"

Slope Int $\boxed{y = -\frac{7}{5}x + 3}$ Pt Slope if we use $(5,-4)$

$$\boxed{y + 4 = -\frac{7}{5}(x-5)}$$

For Std form use

mult by 5 $5y = -7x + 15$

$+7x \quad +7x$ → $\boxed{7x + 5y = 15}$

(18) $(1,5)$ $(2,-1)$ $\dfrac{-1-5}{2-1} \rightarrow \dfrac{-6}{1} \rightarrow -6$ Slope

NO y-int

So PT slope is the way to go

If we use $(1,5)$

$$y-5 = -6(x-1)$$

Slope intercept $y-5 = -6x+6$

$+5 \qquad\qquad +5$

$$y = -6x+11$$

Std form $y = -6x+11$

$+6x \qquad +6x$

$$6x+y = 11$$

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(19) $(4,-3)$ $(1,-5)$ Slope ① $\dfrac{-5+3}{1-4} \rightarrow \dfrac{-2}{-3} \rightarrow \dfrac{2}{3}$

NO y-int so

PT slope ② use $(4,-3)$ ③ Slope intercept

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

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

$y+3 = \frac{2}{3}x - \frac{8}{3} - \frac{9}{3}$

④ Std form mult by 3 $ -3 \qquad -3$

$3y = 2x - 17$ $\rightarrow$ $17 = 2x - 3y$ $y = \frac{2}{3}x - \frac{17}{3}$

(20) $(5,4)$ $(-2,1)$ Slope $\dfrac{1-4}{-2-5} \rightarrow \dfrac{-3}{-7} \rightarrow \boxed{\dfrac{3}{7}}$

no y int So

use $(5,4)$ $\boxed{y-4=\dfrac{3}{7}(x-5)}$ PT-Slope

Slope intercept $\quad y-4=\dfrac{3}{7}x-\dfrac{15}{7}$ ~~mult by 7~~

$\qquad\qquad\qquad +4 \qquad\quad +4$

$\qquad\qquad\qquad y=\dfrac{3}{7}x-\dfrac{15}{7}+\dfrac{28}{7}$

$\qquad\qquad\qquad \boxed{y=\dfrac{3}{7}x+\dfrac{13}{7}}$

Std Form mult by 7 $\quad 7y=3x+13$

$\qquad\qquad\qquad -13 -7y \quad -7y -13$

$\qquad\qquad\qquad \boxed{-13=3x-7y}$