Write Standard Form

$Ax + By = C$

Ex' for $(0, 7)$ $m = -2$

$b = 7$

$y = -2x + 7$

$+2x \quad +2x$

$2x + y = 7$ ✓

Ex 2 std form for $(0,3)$ $m = 4$

b

$$y = 4x + 3$$
$$-4x \quad -4x$$
$$-4x + y = 3$$

but A is non-negative

$$-1(-4x + y) = (3)\,-1$$
$$4x - y = -3$$ ✓

Ex 3

Std form $(0, 4)$ $m = -\frac{1}{2}$

$2(y) = \left(-\frac{1}{2}x + 4\right)2$ clear fraction multiply both sides by 2

$2y = -x + 8$

$+x \quad +x$

$x + 2y = 8$ ✓

Ex 4

Std form for $(0, \frac{1}{2})$ $m = \frac{1}{3}$

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

A, B, C are integers
multiply by L.C.M.

$6y = 2x + 3$

$-2x \quad -2x$

$-1(-2x + 6y) = (3)-1$

$2x - 6y = -3$ ✓

Ex 5

Std form for $(1, 5)$ $m = 3$

I don't have y-int (no "b" term)

How can I get "b" in $y = mx + b$

sub in $x = 1$, $y = 5$ $m = 3$ solve for b

$5 = 3(1) + b$

$5 = 3 + b$

$-3 \quad -3$

$2 = b$

$y = 3x + 2$

$-3x \quad -3x$

$-1(-3x + y) = (2)\,-1$

$3x - y = -2$ ✓

Enrichment

point slope form - when you have point + slope

$$\frac{y_2 - y_1}{x_2 - x_1} = m$$

$$(x - x_1)\left(\frac{y - y_1}{x - x_1}\right) = m(x - x_1)$$

$$y - y_1 = m(x - x_1)$$ ← point slope form

$$y - \square^{y_1} = \square^{m}(x - \square^{x_1})$$

$y - \square = \square(x - \square)$ (with y_1, m, x_1)

pt $(1, 5)$ $m = 3$

x_1, y_1

$$y - 5 = 3(x - 1)$$

$$y - 5 = 3x - 3$$

$+5 \qquad +5$

$$y = 3x + 2$$

$-3x \qquad -3x$

$$-3x + y = 2$$

$$3x - y = -2 \checkmark$$

Practice: Find std form

1. $(0,3)$ $m=-1$ $x+y=3$
2. $(0,4)$ $m=2$ $2x-y=-4$
3. $(0,2)$ $m=-\frac{1}{2}$ $x+2y=4$
4. $(0,1)$ $m=\frac{2}{3}$ $2x-3y=-3$
5. $(0,\frac{1}{4})$ $m=-\frac{1}{2}$ $2x+4y=1$
6. $(2,1)$ $m=\frac{1}{2}$ $x-2y=0$