Principles of Algebra Name/Date Clee / Today

WS 8B.1 – Standard Form and Point-Slope Form

#1-2 – Convert each equation to standard form.

1. $y = 3x + 7$

$-3x \quad -3x$

$\cdot(-1) \quad \cdot(-1) \quad \cdot(-1)$

$-3x + y = 7$

$3x - y = -7$

Standard Form

$Ax + By = C$

① No fractions

② x and y alone on left

③ x first and positive

2. $3x = -7y - 17$

$+7y \quad +7y$

$3x + 7y = -17$

#3 – Write an equation in point-slope form that meets the given conditions.

3. Slope -2 (m), through $(-3, 4)$ (x_1, y_1)

$y - 4 = -2(x - (-3))$

$y - 4 = -2(x + 3)$

Point-Slope Form

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

#4-5 – Write each equation in slope-intercept form AND in standard form.

4. $y - 50 = 8(x - 4)$

Convert to slope-intercept by solving for y.

$y - 50 = 8x - 32$

$+50 \quad +50$

$y = 8x + 18$ (slope-intercept)

Convert to standard form by following the 3 steps listed above:

$y = 8x + 18$

$-8x \quad -8x$

$\cdot(-1) \quad \cdot(-1) \quad \cdot(-1)$

$-8x + y = 18$

$8x - y = -18$ (standard)

5. $y = 10(-4x + 3)$

Convert to slope-intercept by solving for y.

$y = 10(-4x + 3)$

$y = -40x + 30$ (slope-intercept)

Convert to standard form by following the 3 steps listed above:

$y = -40x + 30$

$+40x \quad +40x$

$40x + y = 30$ (standard)

#6-8 – Write an equation in point-slope form for each situation, then convert to slope-intercept form, then convert to standard form.

6. Through $(-3, 3)$ and $(-4, 4)$

① Find slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

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

$$m = -1$$

② Point-slope form:

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

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

or $\boxed{y - 3 = -1(x + 3)}$

③ Slope-intercept form:

$y = mx + b$ (solve for y)

$y - 4 = -1(x + 4)$

$y - 4 = -x - 4$

$\boxed{y = -x}$

④ Standard form:

$Ax + By = C$

$y = -x$

$\boxed{x + y = 0}$

7. Slope 3, through $(2, 6)$

① Find slope: $m = 3$

② Point-slope form:

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

$\boxed{y - 6 = 3(x - 2)}$

③ Slope-intercept form:

$y = mx + b$ (solve for y)

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

$y - 6 = 3x - 6$

$\boxed{y = 3x}$

④ Standard form:

$Ax + By = C$

$y = 3x$

$-3x + y = 0$

$\boxed{3x - y = 0}$

8. Slope $\frac{1}{5}$, through $(-4, -2)$

① Find slope: $m = \frac{1}{5}$

② Point-slope form:

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

$\boxed{y + 2 = \frac{1}{5}(x + 4)}$

③ Slope-intercept form:

$y = mx + b$ (solve for y)

$y + 2 = \frac{1}{5}(x + 4)$

$y + 2 = \frac{1}{5}x + \frac{4}{5}$

$\boxed{y = \frac{1}{5}x - \frac{6}{5}}$

④ Standard form:

$Ax + By = C$

$y = \frac{1}{5}x - \frac{6}{5}$

$5y = x - 6$

$-x + 5y = -6$

$\boxed{x - 5y = 6}$