

Worksheet 2-2-6 ~ Point-Slope Form ($y - y_1 = m(x - x_1)$)

Note: A useful form of Linear Equations is Point-Slope form. This is used when we know (or can derive) a slope and also have a point. From this form, we rewrite the equation in $y = mx + b$ or $Ax + By = C$ forms.

Point-slope Form: Given a point (x_1, y_1) and a slope (m) , the equation is: $y - y_1 = m(x - x_1)$

- Given $m = -3$ and $(-3, -2)$ we substitute these values into our equation:
- $y - (-2) = -3(x - (-3))$; $y + 2 = -3(x + 3)$ This is proper point-slope form.
- Rewrite in slope-intercept form ($y = mx + b$): $y = -3(x + 3) - 2$; $y = -3x - 11$
- Rewrite in standard form ($Ax + By = C$): $3x + y = -11$

Generate an equation in point-slope form given the following information:

- $m = 3$, containing $(2, 3)$
- $m = 3$, containing $(-4, 7)$
- $m = -4$, containing $(0, 3)$
- $m = -5$, containing $(7, 2)$
- $m = \frac{2}{3}$, containing $(3, 2)$
- $m = -\frac{3}{2}$, containing $(2, -3)$
- $(-3, 1)$ and $(5, 4)$
- $(5, -6)$ and $(2, 3)$
- $(2, -2)$ and $(-6, 1)$
- $(3, 4)$ and $(-7, 4)$
- $(0, -2)$ and $(7, 0)$
- $(-5, -1)$ and $(4, -7)$