

Tuesday, September 13, 2016

Opener: 2.1 Peardeck
2.1 Notes - Linear Functions, Applications

PLAN

(P+L)(A+N)
PA+PN+LA+LN

Your plan has been foiled

$$\begin{aligned} & \begin{matrix} h & k \\ (-3, 2) & (5, -30) \end{matrix} \\ & -30 = a(5+3)^2 + 2 \\ & -30 = a(8)^2 + 2 \\ & -30 = 64a + 2 \\ & -32 = 64a \end{aligned}$$

$$\boxed{-\frac{1}{2} = a}$$

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

2.1 Linear Model

Standard Form / Slope-Intercept Form

$$f(x) = ax + b$$

$$y = mx + b$$

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

b = y-intercept

Point-Slope Form

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

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

$m = \text{slope}$
 (x_1, y_1) any point on line

① If $f(2) = -3$ and $f(-4) = 5$, find equation of a line in standard and pt-slope form.

$(2, -3)$ $(-4, 5)$

$$m = \frac{5 - (-3)}{-4 - 2} = \frac{8}{-6} = -\frac{4}{3}$$

Solve for b :

$$y = mx + b$$

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

$$-3 = -\frac{8}{3} + b$$

$$-\frac{9}{3} + \frac{8}{3} \quad + \frac{8}{3}$$

$$-\frac{1}{3} = b \text{ standard form:}$$

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

Point-slope:

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