Lesson 2-8: Writing Quadratic Functions in Standard Form (curve-fitting)

Sept. 25

Write a quadratic function in standard form that contains each set of points.

$f(x) = ax^2 + bx + c$

1 **(0, 4), (-1, 2), and (3, -2)** (x y, x y, x y)

$f(x) = -x^2 + x + 4$

(0,4) ① $4 = c$

(-1,2) ② $2 = a - b + c \longrightarrow 2 = a - b + 4$

(3,-2) ③ $-2 = 9a + 3b + c \longrightarrow -2 = 9a + 3b + 4$

$3(-2 = a - b)$

$-6 = 9a + 3b$

$-12 = 12a$

$-1 = a$

$b = 1$

2 **(-2, -1), (1, 11), and (2, 27)**

$f(x) = 3x^2 + 7x + 1$

$f(x) = ax^2 + bx + c$

(-2,-1) ① $-1 = 4a - 2b + c \rightarrow$ ① $-1 = 4a - 2b + c$

(1,11) ② $11 = a + b + c \quad (-1) \rightarrow$ ② $-11 = -a - b - c$

(2,27) ③ $27 = 4a + 2b + c$

$-12 = 3a - 3b$

$16 = 3a + b$

② $-11 = -a - b - c$

③ $27 = 4a + 2b + c$

$16 = 3a + b$

$a = 3, \; b = 7, \; c = 1$