

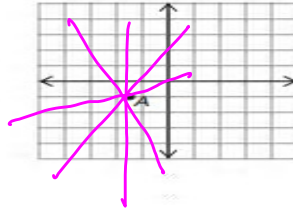
Section 4.5 (Day 1) Deriving Quadratic Functions

Warm Up A Dime A Dozen



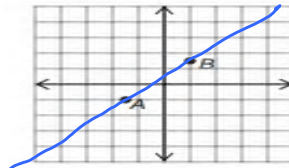
1. Consider the family of linear functions. Use the given point(s) to sketch possible solutions.

a. How many lines can you draw through point A?



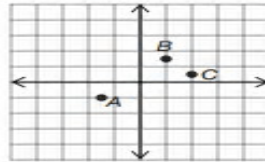
An Infinite Amount

b. How many lines can you draw through both points A and B?



Only 1 Unique Line

c. How many lines can you draw through all points A, B, and C?



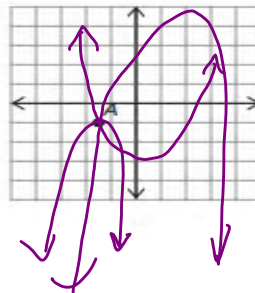
None. A, B & C
Do Not Form a
line

2. What is the minimum number of points you need to draw a unique line?

You must have 2 points to draw a unique line.

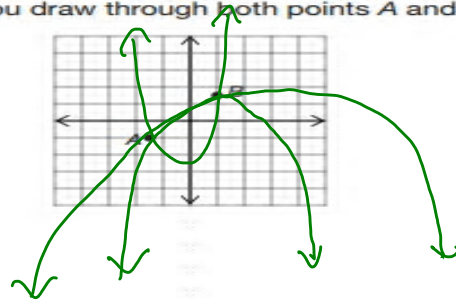
3. Consider the family of quadratic functions. Use the given point(s) to sketch possible solutions.

a. How many parabolas can you draw through point A?



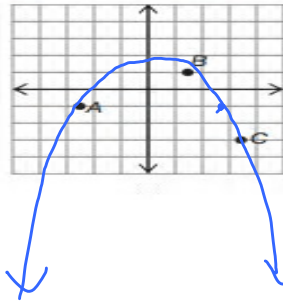
An Infinite Amount

b. How many parabolas can you draw through both points A and B?



An Infinite Amount

c. How many parabolas can you draw through all points A, B, and C?



Only 1.

Solve the following systems using Elimination.

$$\begin{aligned} 1. \quad & 3x + y = 17 \\ & -4x - y = -21 \\ \hline & -x = -4 \\ & x = 4 \checkmark \end{aligned}$$

$$\begin{aligned} 3(4) + y &= 17 \\ 12 + y &= 17 \\ y &= 5 \checkmark \end{aligned}$$

$(4, 5)$

$$\begin{aligned} 2. \quad & 3x + 4y = -25 \\ & -1(3x - 2y) = (-1) \cdot 1 \\ \hline & 3x + 4y = -25 \\ & -3x + 2y = 1 \\ \hline & 6y = -24 \\ & \frac{6y}{6} = \frac{-24}{6} \end{aligned}$$

$$\begin{aligned} y &= -4 \checkmark \\ 3x + 4(-4) &= -25 \\ 3x - 16 &= -25 \\ 3x &= -9 \\ x &= -3 \checkmark \end{aligned}$$

$(-3, -4)$

$$\begin{aligned} 3. \quad & x + 2y = -1 \\ & 2(3x - y) = (18) \cdot 2 \\ \hline & x + 2y = -1 \\ & 6x - 2y = 36 \\ \hline & 7x = 35 \\ & x = 5 \checkmark \end{aligned}$$

$$\begin{aligned} 5 + 2y &= -1 \\ 2y &= -6 \\ y &= -3 \checkmark \end{aligned}$$

$(5, -3)$

Solve the following 3 x 3 systems using Elimination.

Eliminate Y

$$① 4x - y + 3z = 13$$

$$② x + y + z = 2$$

$$③ x + 3y - 2z = -17$$

$$① 4x - y + 3z = 13$$

$$② x + y + z = 2$$

$$④ 5x + 4z = 15$$

$$3 \cdot ① \quad 12x - 3y + 9z = 39$$

$$③ \quad x + 3y - 2z = -17$$

$$⑤ 13x + 7z = 22$$

$$4 \cdot ④ \quad 20x + 16z = 60 \quad \rightarrow \quad 35x + 28z = 105$$

$$-4 \cdot ⑤ \quad -52x - 28z = -88 \quad \rightarrow \quad -17x = 17$$

$$-17x = 17$$

$$x = -1 \checkmark$$

$$5(-1) + 4z = 15$$

$$-5 + 4z = 15$$

$$4z = 20$$

$$z = 5 \checkmark$$

$$x + y + z = 2$$

$$-1 + y + 5 = 2$$

$$y + 4 = 2$$

$$y = -2 \checkmark$$

$$(-1, -2, 5)$$

Eliminate
x

$$2x - y + 6z = -4$$

$$6x + 4y - 5z = -7$$

$$-4x - 2y + 5z = 9$$

$$\cdot (3) \quad (1) \quad -6x + 3y - 18z = 12$$

$$(2) \quad 6x + 4y - 5z = -7$$

$$(4) \quad 7y - 23z = 5$$

$$\cdot (2) \quad (1) \quad 4x - 2y + 12z = -8$$

$$(3) \quad -4x - 2y + 5z = 9$$

$$(5) \quad -4y + 17z = 1$$

$$(4) \quad (7y - 23z) = (5) \cdot 4 \rightarrow 28y - 92z = 20$$

$$7 \cdot (5) \quad (-4y + 17z) = (1) \cdot 7 \rightarrow -28y + 119z = 7$$

$$27z = 27$$

$$z = 1 \checkmark$$

$$-4y + 17 = 1$$

$$-4y = -16$$

$$y = 4 \checkmark$$

$$(1) \quad 2x - 4 + 6 = -4$$

$$2x + 2 = -4$$

$$2x = -6$$

$$x = -3 \checkmark$$

$$(-3, 4, 1)$$