

Chapter 1

Linear Functions



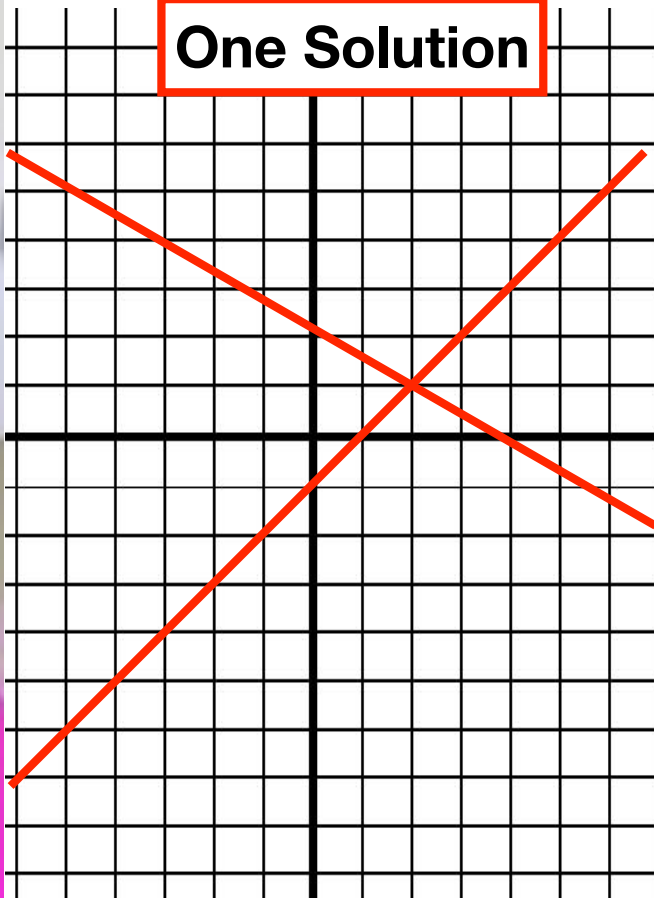
1. Parent Functions and Transformations
2. Transformations of Linear and Absolute Value Functions
3. Modeling with Linear Functions
4. **Solving Linear Systems**

1.4 - Solving Linear Systems

Graphing Equation in Two Variables

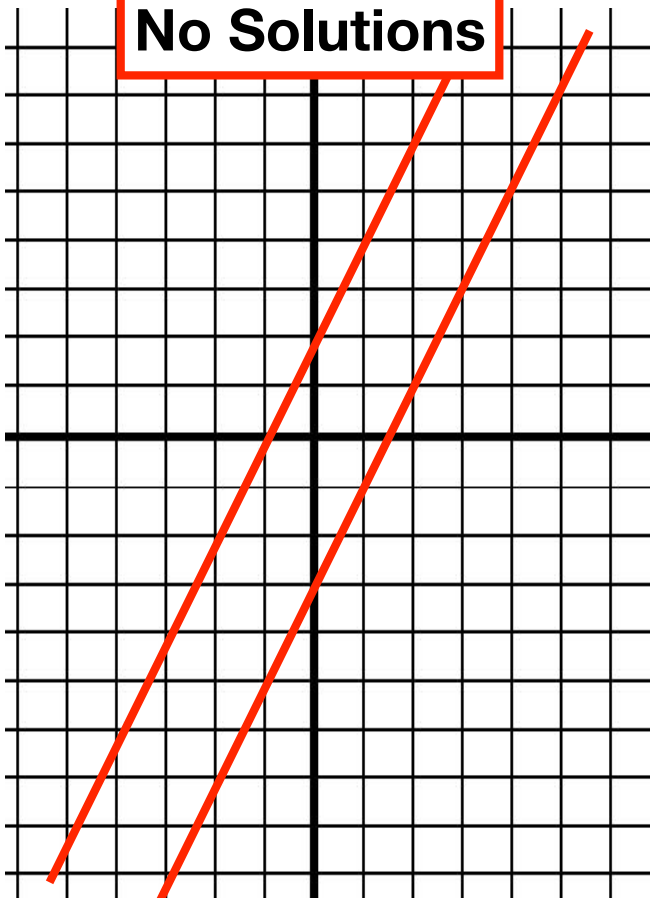
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One Solution



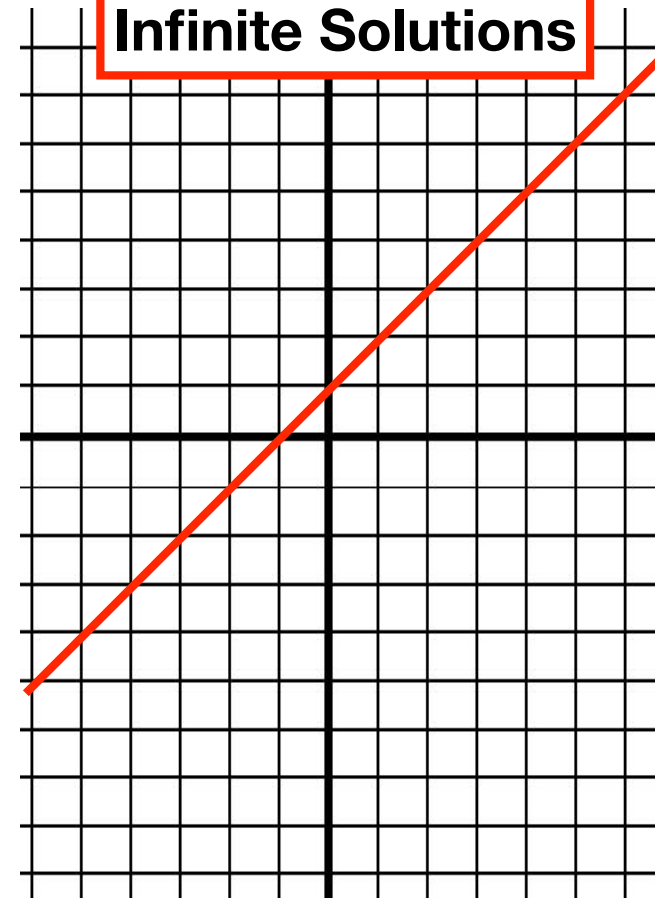
$$y = -\frac{1}{2}x + 2$$
$$y = x - 1$$

No Solutions



$$y = 2x + 2$$
$$y = 2x - 3$$

Infinite Solutions



$$y = x + 1$$
$$y = x + 1$$

1.4 - Solving Linear Systems

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Linear Equation in Two Variables

a. $3x - 7y = 10$

$$6x - 8y = 8$$

$$\left(-\frac{4}{3}, -2\right)$$

b. $8x + 2y = 4$

$$-2x + 3y = 13$$

$$\left(-\frac{1}{2}, 4\right)$$

1.4 - Solving Linear Systems

Practice - Linear Equation in Two Variables^{3 of 9}

7. $-3x + 3y = 3$

$$3x + y = 9$$

10. $4x - 2y = -2$

$$6x + y = 5$$

8. $5x - y = -9$

$$2x + y = 2$$

11. $3x + 2y = 1$

$$4x + 6y = 7$$

9. $-5x + 12y = 20$

$$x - 2y = -6$$

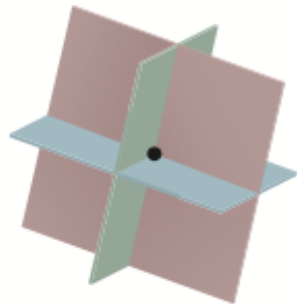
12. $7x - 3y = 6$

$$-2x + 5y = -10$$

1.4 - Solving Linear Systems

Linear Equation in Three Variables

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Exactly One Solution



Infinite Number of Solutions



No Solution



1.4 - Solving Linear Systems

Linear Equation in Three Variables

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3 Equations Elimination Method

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



1.4 - Solving Linear Systems

Solve the system

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$$4x + 2y + 3z = 1$$

$$2x - 3y + 5z = -14$$

$$6x - y + 4z = -1$$

(2, 1, -3)

1.4 - Solving Linear Systems

Solve the system

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$$6x + 8y - 6z = 62$$

$$10x - 12y - 14z = 14$$

$$12x - 8y + 20z = -68 \quad (2, 4, -3)$$

1.4 - Solving Linear Systems

Solve the system

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$$x + y + z = 1$$

$$6x + 9y - 12z = 14$$

$$12x + 18y - 24z = -11 \quad \textit{no solution}$$

1.4 - Solving Linear Systems

Solve the system

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$$2x - 2y + 2z = 12$$

$$10x - 2y + 10z = 60$$

$$2x + 2y + 2z = 12$$

infinite solutions
e.g. $(6-z, 0, z)$

