



Introduction to Graphing Linear Equations

Welcome to this worksheet on graphing linear equations using slope-intercept form! This worksheet is designed to help you practice and reinforce your understanding of graphing linear equations in the slope-intercept form, $y = mx + b$.

The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y-intercept. The slope represents the rate of change of the line, while the y-intercept represents the point at which the line crosses the y-axis.

Multiple Choice Questions

Choose the correct answer for each question.

1. What is the slope-intercept form of a linear equation?

- a) $y = mx - b$
- b) $y = mx + b$
- c) $y = x + b$
- d) $y = x - b$

Answer: b) $y = mx + b$

2. What is the y-intercept of the equation $y = 2x + 3$?

- a) 2
- b) 3
- c) 4
- d) 5

Answer: b) 3

3. What is the slope of the equation $y = -x - 2$?

- a) -1
- b) 1
- c) 2
- d) -2

Answer: a) -1

Short Answer Questions

Show your work and explain your answers.

1. Graph the equation $y = x + 2$ on a coordinate plane.

2. Find the y-intercept of the equation $y = 3x - 2$.

3. Graph the equation $y = -2x + 1$ on a coordinate plane.

Word Problems

Read each problem carefully and show your work.

1. Tom has been saving money for a new bike and has \$120 in his savings account. He wants to buy a bike that costs \$180. If he saves \$12 per week, how many weeks will it take him to have enough money to buy the bike? Use a linear equation to model the situation and graph it on a coordinate plane.

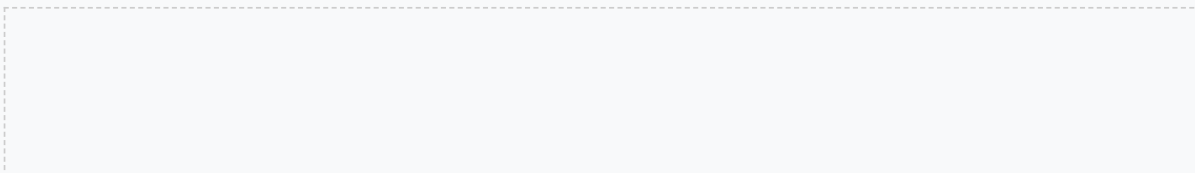
2. A company is producing a new product and wants to determine the cost of production. The cost of producing x units is given by the equation $y = 2x + 100$. Graph the equation on a coordinate plane and find the cost of producing 10 units.

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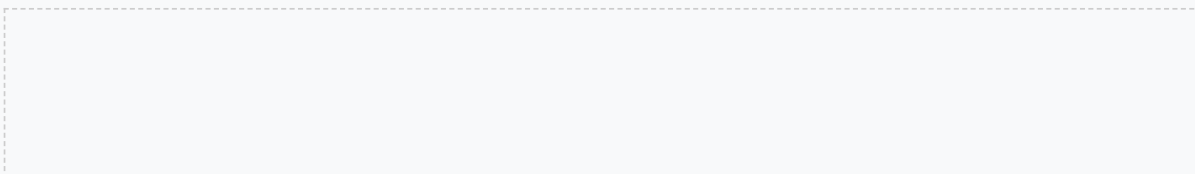
Graphing Activities

Graph each equation on a coordinate plane.

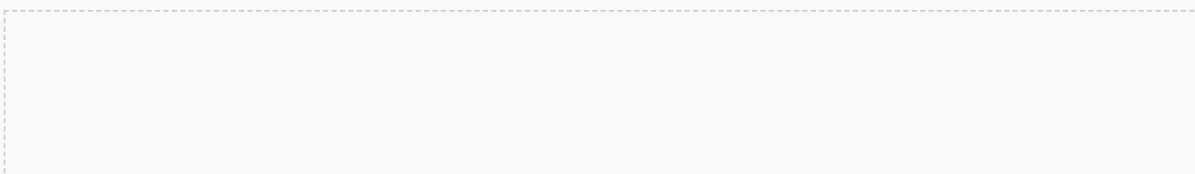
1. $y = x - 3$



2. $y = 2x + 1$



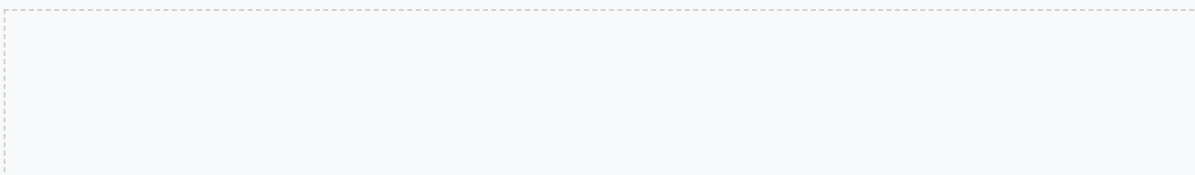
3. $y = -x - 2$



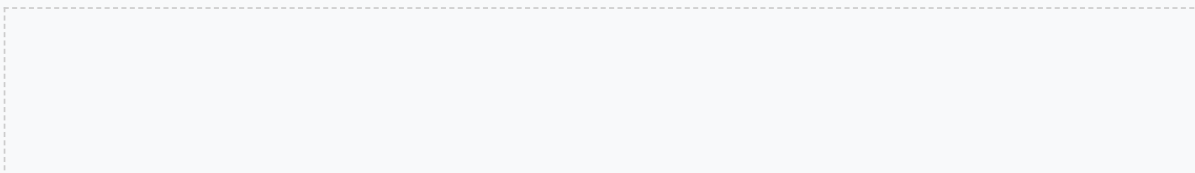
Challenge Questions

Show your work and explain your answers.

1. Find the equation of the line that passes through the points (2, 3) and (4, 5).



2. Graph the equation $y = x^2 + 2x - 3$ on a coordinate plane.



Linear Equations in Real-World Applications

Read each problem carefully and show your work.

1. A car rental company charges a base fee of \$20 plus an additional \$0.25 per mile driven. If a customer rents a car for a day and drives x miles, the total cost can be represented by the equation $y = 0.25x + 20$. Graph the equation on a coordinate plane and find the cost of driving 100 miles.

2. A bakery sells a total of 250 loaves of bread per day. They sell a combination of whole wheat and white bread. If they sell x loaves of whole wheat bread, they sell $(250 - x)$ loaves of white bread. The profit from selling x loaves of whole wheat bread is $\$0.50x$, and the profit from selling $(250 - x)$ loaves of white bread is $\$0.25(250 - x)$. The total profit is given by the equation $y = 0.50x + 0.25(250 - x)$. Graph the equation on a coordinate plane and find the profit when 150 loaves of whole wheat bread are sold.

Graphing Linear Inequalities

Graph each inequality on a coordinate plane.

1. $y > 2x - 3$

2. $y \leq -x + 2$

3. $y \geq 3x - 1$

Systems of Linear Equations

Solve each system of equations using graphing.

1. $y = 2x + 1$
 $y = x - 2$

2. $y = -x + 3$
 $y = 2x - 1$

Word Problems Involving Systems of Equations

Read each problem carefully and show your work.

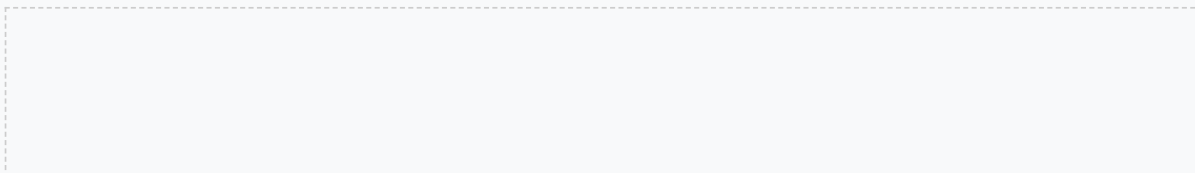
1. Tom has \$120 to spend on tickets to a concert. Tickets cost \$20 each, and Tom wants to buy a combination of adult and child tickets. If x is the number of adult tickets and y is the number of child tickets, the total cost can be represented by the equation $20x + 10y = 120$. Tom also knows that he wants to buy a total of 6 tickets, which can be represented by the equation $x + y = 6$. Solve the system of equations to find the number of adult and child tickets Tom can buy.

2. A company produces two products, A and B. The profit from producing x units of product A is $\$10x$, and the profit from producing y units of product B is $\$15y$. The total profit is given by the equation $y = 10x + 15y$. The company also knows that they can produce a total of 100 units per day, which can be represented by the equation $x + y = 100$. Solve the system of equations to find the number of units of each product the company should produce to maximize profit.

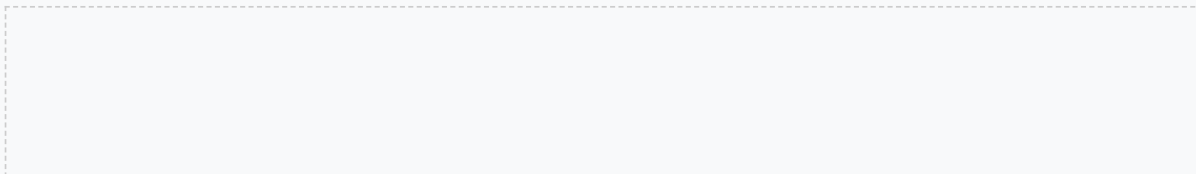
Quadratic Equations and Functions

Graph each equation on a coordinate plane.

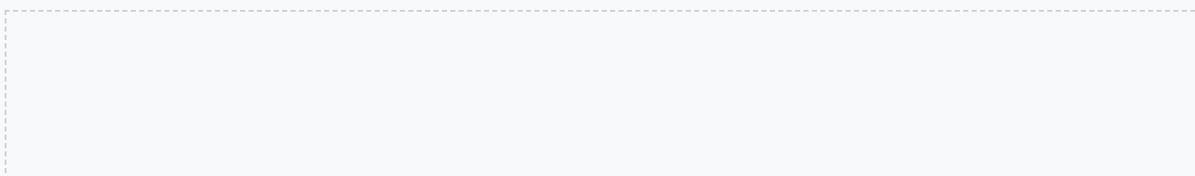
1. $y = x^2 + 2x - 3$



2. $y = -x^2 + 4x - 1$



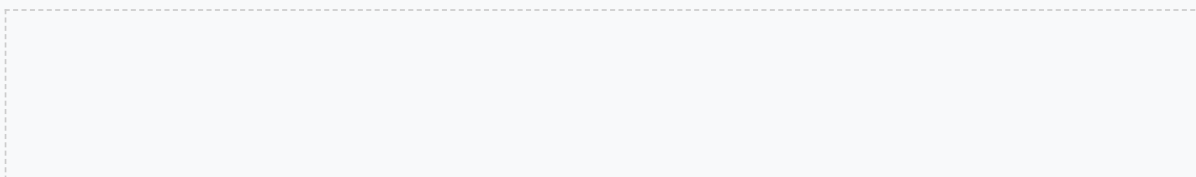
3. $y = 2x^2 - 5x + 1$



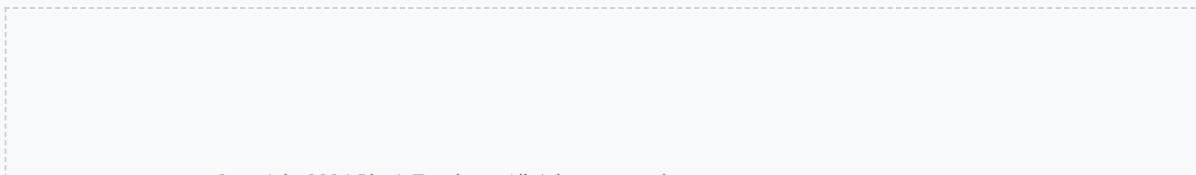
Solving Quadratic Equations

Solve each equation using factoring, quadratic formula, or other methods.

1. $x^2 + 4x + 4 = 0$

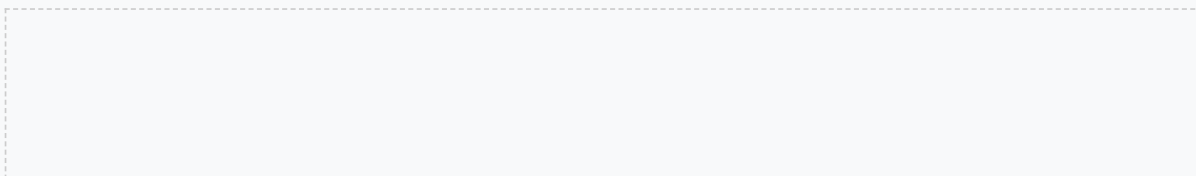


2. $x^2 - 7x + 12 = 0$



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3. $2x^2 + 5x - 3 = 0$



Functions and Relations

Determine whether each relation is a function.

1. $y = 2x + 1$

2. $x^2 + y^2 = 4$

3. $y = |x|$

Domain and Range of Functions

Find the domain and range of each function.

1. $y = 1/x$

2. $y = \sqrt{x}$

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3. $y = |x|$

Composition of Functions

Find the composition of each pair of functions.

1. $f(x) = 2x + 1$
 $g(x) = x^2$

2. $f(x) = 1/x$
 $g(x) = x + 2$

3. $f(x) = |x|$
 $g(x) = x - 3$

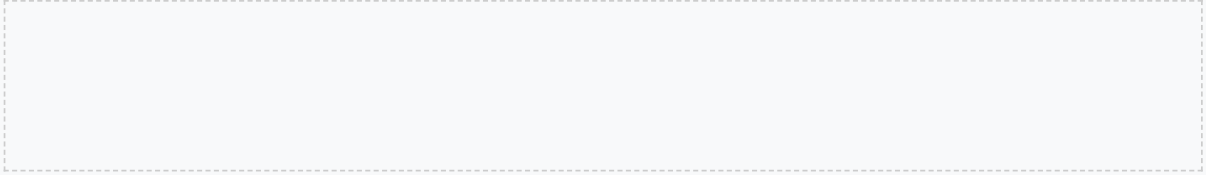
Inverse Functions

Find the inverse of each function.

1. $y = 2x + 1$

2. $y = x^2$

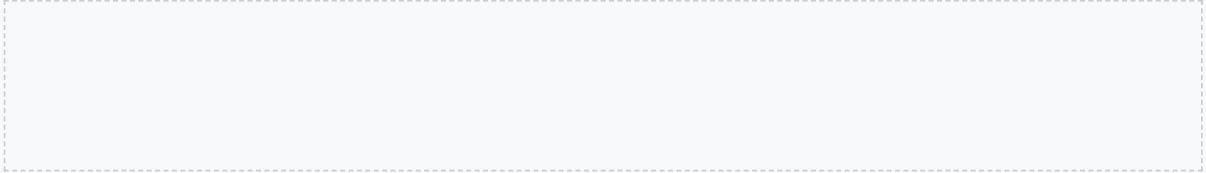
3. $y = 1/x$



Review and Assessment

Complete the review exercises to assess your understanding of the material.

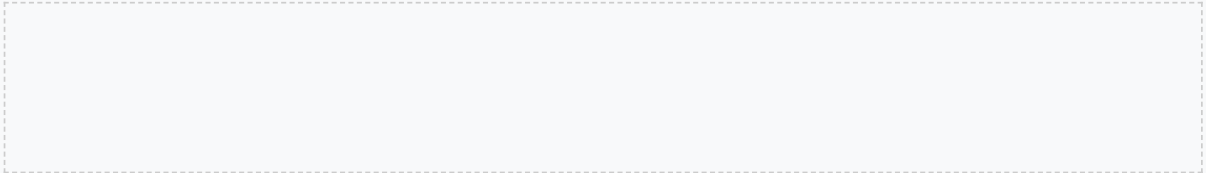
1. Graph the equation $y = x^2 + 2x - 3$ on a coordinate plane.



2. Solve the system of equations using graphing:

$$y = 2x + 1$$

$$y = x - 2$$



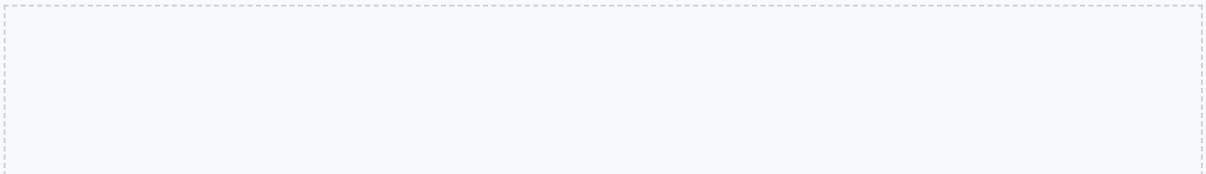
3. Find the composition of the functions $f(x) = 2x + 1$ and $g(x) = x^2$.



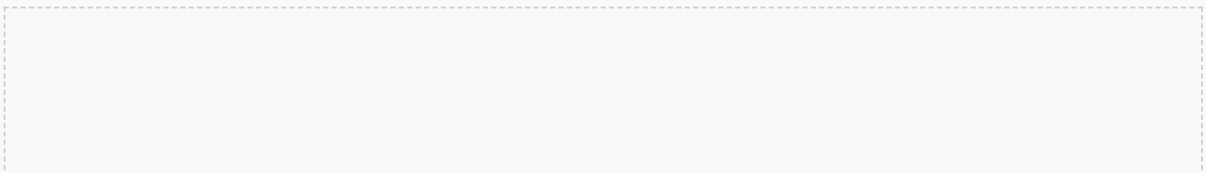
Challenge Problems

Solve each problem to demonstrate your mastery of the material.

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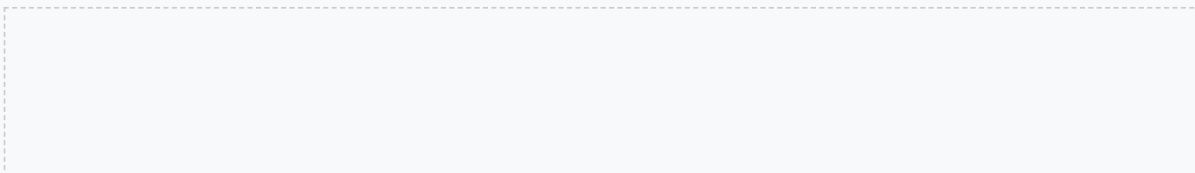
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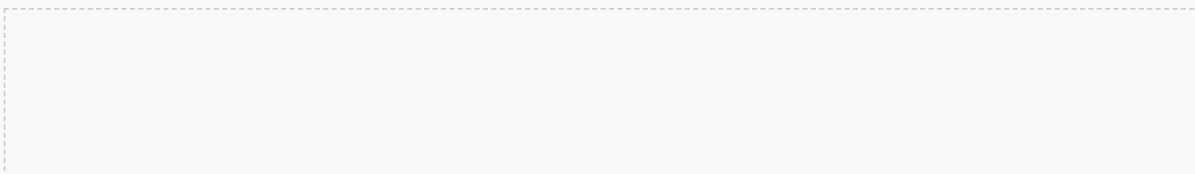
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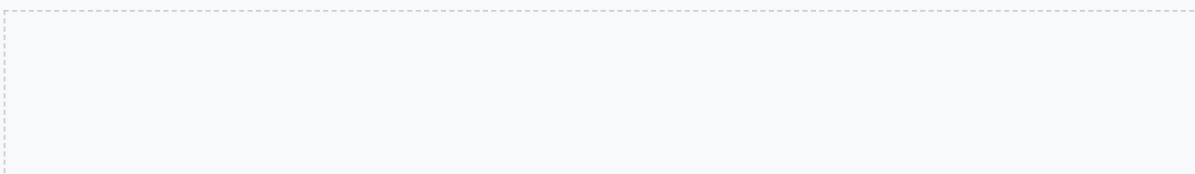
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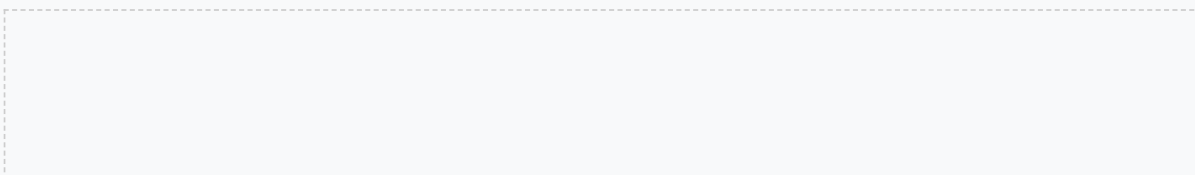
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