Precalculus Worksheet

Topic: Quadratic Equations

Instructions

Answer the following problems. Use diagrams and show all calculations clearly.

Practice Problems

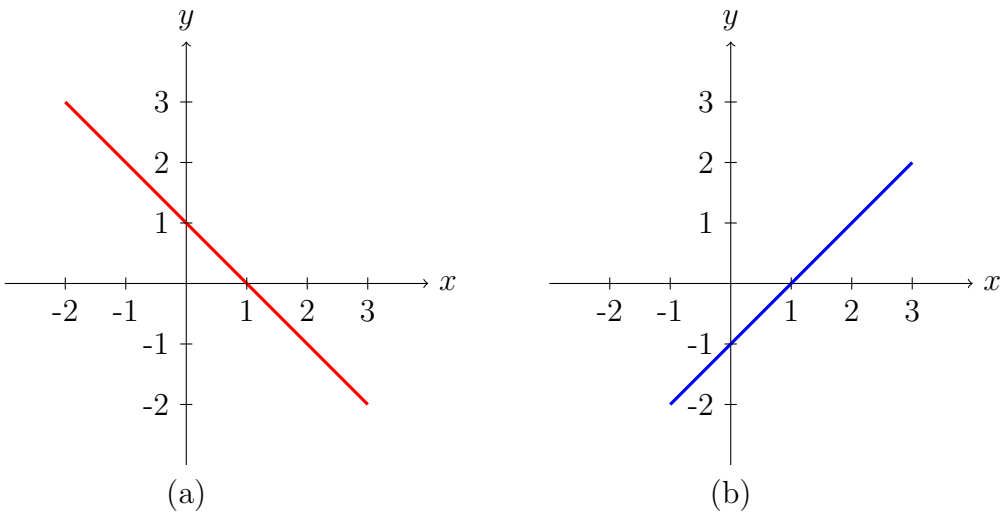
1. Find the slope of the line passing through the points $(3, 4)$ and $(-2, -1)$.
2. Write the equation of a line in slope-intercept form that has a slope of $\frac{2}{3}$ and passes through the point $(1, -4)$.
3. Convert the equation $3x + 4y = 12$ into slope-intercept form.
4. Determine whether the lines $y = 2x - 5$ and $y = -\frac{1}{2}x + 3$ are parallel, perpendicular, or neither.
5. Find the equation of a line that is perpendicular to $y = -3x + 7$ and passes through the point $(2, -1)$.
6. Graph the line $y = \frac{1}{2}x - 3$. Indicate the x- and y-intercepts.
7. Sketch the lines represented by the following equations on the same coordinate plane:
8. $y = 2x + 1$
9. $y = -\frac{1}{2}x - 2$
10. Plot the points $(2, 1)$ and $(-3, -2)$ on a graph and draw the line passing through these points. Write the equation of the line.

11. A line passes through the points $(1, 2)$ and $(4, 10)$. Find its slope, and write its equation in both point-slope and slope-intercept forms.

12. A vertical line passes through the point $(-2, 5)$. Write its equation and explain why it is vertical.

13. The sum of the x- and y-intercepts of a line is 10, and the slope of the line is $-\frac{2}{3}$. Write the equation of the line.

14. Find the equation of the line whose graph is sketched:



15. Find the equation of the line that satisfies the given conditions:

    i. Through $(1, 2)$; slope 3

    ii. Through $(-2, 4)$; slope -1

    iii. Through $(0, 0)$ and $(3, 6)$

    iv. x-intercept 2; y-intercept -4

16. **Graph the following lines and label their intercepts:**

    i. $y = 2x - 3$

    ii. $x + y = 4$

    iii. $x - y = 1$

Multiple Choice Questions

1. What is the slope of the line passing through $(2, 3)$ and $(5, -1)$?

    (a) $\frac{2}{3}$

    (b) $-\frac{4}{3}$

    (c) $\frac{3}{2}$

(d) -2

2. Which of the following represents the equation of a line with slope 3 and y-intercept -2?

   (a) $y = 3x + 2$

   (b) $y = 3x - 2$

   (c) $y = -3x - 2$

   (d) $y = -3x + 2$

3. What is the x-intercept of the line $2x + 3y = 6$?

   (a) 3

   (b) 2

   (c) 1

   (d) 0
