

Write a linear equation for the line described below.

1. Write the equation of a line that is parallel to $y = 3x - 1$ and passes through the point $(2, 1)$.

$y = 3x - 1$ $y = 3x + b$ $1 = 3(2) + b$ $1 = 6 + b$ $b = -5$

$y = 3x - 5$

$y = 3x - 4$

2. Write the equation of a line that is perpendicular to $y = 2x + 3$ and passes through the point $(-1, 2)$.

$y = 2x + 3$ $y = -\frac{1}{2}x + b$ $2 = -\frac{1}{2}(-1) + b$ $2 = \frac{1}{2} + b$ $b = \frac{3}{2}$

$y = -\frac{1}{2}x + \frac{3}{2}$

$y = -\frac{1}{2}x + 3$

3. Write the equation of a line that passes through the points $(-2, 1)$ and $(1, 2)$.

$m = \frac{2 - 1}{1 - (-2)} = \frac{1}{3}$ $y = \frac{1}{3}x + b$ $1 = \frac{1}{3}(-2) + b$ $1 = -\frac{2}{3} + b$ $b = \frac{5}{3}$

$y = \frac{1}{3}x + \frac{5}{3}$

Write the following absolute value inequalities.

4. $|x - 10| < 2$

$x - 10 < 2$ $x - 10 > -2$

$x < 12$ $x > 8$

$8 < x < 12$

5. $|x + 2| = 7$

$x + 2 = 7$ $x + 2 = -7$

$x = 5$ $x = -9$

$x = 5$ or $x = -9$

Write the following absolute value inequalities, and graph your answer on the number line.

6. $|x + 12| > 2$

$x + 12 > 2$ $x + 12 < -2$

$x > -10$ $x < -14$

$x > -10$ or $x < -14$

7. $|x - 10| < 12$

$x - 10 < 12$ $x - 10 > -12$

$x < 22$ $x > -2$

$-2 < x < 22$

State the domain and range, and determine if the relation is a function.

8. A person who weighs 150 pounds burns 400 calories per hour of moderate exercise. For each additional 10 pounds a person's metabolism for 1 hour is roughly 10% as sensitive to 1 hour, complete the following:

(a) State the domain: $0 \leq x \leq 5$ hours

(b) State the range: $0 \leq y \leq 2000$ calories

(c) Write an algebraic function for this.

Yes, for each time value there is only one calorie value.

Handwritten notes: "not a function", "Always use interval notation", "range of x"