

KEY POINTS

Section 3.2 Solving Inequalities

- Inequality notation
- Solving inequalities

Warm - Up

Section 3.2
Solving
Inequalities

$$\frac{3}{2x-1} + \frac{5}{3-2x} = 0$$

$$\left(\frac{3-2x}{3-2x}\right)\frac{3}{2x-1} + \frac{5}{3-2x}\left(\frac{2x-1}{2x-1}\right) = 0$$

$$\frac{3(3-2x) + 5(2x-1)}{(3-2x)(2x-1)} = 0$$

$$9 - 6x + 10x - 5 = 0$$

$$4x + 4 = 0$$

-4 -4

$$\frac{4x}{4} = \frac{-4}{4} \quad (x = -1)$$

$$29. s = v_0 t + \frac{1}{2} a t^2 \quad \text{for } a$$

$$s - v_0 t = \frac{1}{2} a t^2$$

$$2(s - v_0 t) = \frac{a t^2}{2} \cdot 2$$

$$\frac{2(s - v_0 t)}{t^2} = \frac{a t^2}{t^2}$$

$$\frac{2(s - v_0 t)}{t^2} = a$$

$$15. \frac{3}{z-2} = \frac{2}{z-3}$$

$$3(z-3) = 2(z-2)$$

$$3z - 9 = 2z - 4$$

$$\begin{array}{r} 3z - 9 = 2z - 4 \\ +9 \quad \quad +9 \\ \hline 3z = 2z + 5 \end{array}$$

$$\begin{array}{r} 3z = 2z + 5 \\ -2z \quad -2z \\ \hline 1z = 5 \end{array}$$

Discussion

Section 3.2
Solving
Inequalities

What do you know about inequalities?

Used to identify domain and range

can be balanced

$>$ $<$ \geq \leq

not always equal to a specific value.

Discussion

Section 3.2
**Solving
Inequalities**

$<$ less than, no more than

$>$ greater than, at least, more than

\leq less than or equal to

\geq greater than or equal to

Examples

Section 3.2

Solving Inequalities

$$G \geq 70$$
$$70 \leq G \leq 75$$

Write an inequality for each situation.

a.) Her grade G must be greater than or equal to 70 and less than 75 in order to receive a C in the course.

$$70 \leq G < 75$$

b.) The minimum speed on the highway, s , is 35 mph and the maximum speed is 65 mph.

$$35 \leq s \leq 65$$

c.) The basketball team only considers players, P , who are at least 6 feet tall.

$$P \geq 6$$

Examples

Section 3.2

Solving Inequalities

pg 67
1-6

When we solve inequalities, we solve them the same way that we solve equations. This means we reduce inequalities to simpler inequalities having the same solutions.

Solve the equation: $4x + 5 = 29$

$$\begin{array}{r} -5 \quad -5 \\ \hline 4x = 24 \\ \hline 4 \quad 4 \\ \hline x = 6 \end{array}$$

6 is the only
Solution
possible.

Solve the inequality: $4x + 5 < 29$

$$\begin{array}{r} -5 \quad -5 \\ \hline 4x < 24 \\ \hline 4 \quad 4 \\ \hline x < 6 \end{array}$$

Any number
less than 6
is a possible
Solution.

Warm-Up

Section 3.2
Solving
Inequalities

Solve: $6x - 9 < 27$

$$\begin{array}{r} +9 \quad +9 \\ \hline 6x < 36 \\ \hline \frac{6x}{6} < \frac{36}{6} \quad x < 6 \end{array}$$

Practice

Section 3.2
Solving
Inequalities

Solve the inequality: $-3x + 9 < 33$

$$\begin{array}{r} -9 \quad -9 \\ \hline \end{array}$$

$$\begin{array}{r} -3x < 24 \\ \hline -3 \quad -3 \end{array}$$

$$x > -8$$

Examples

Section 3.2 Solving Inequalities

When we are working with inequalities there is a special rule that we need to follow when it comes to multiplication and division.

IF YOU HAVE TO MULTIPLY OR DIVIDE BY A NEGATIVE NUMBER, WE MUST REVERSE THE DIRECTION OF THE INEQUALITY TO KEEP THE STATEMENT TRUE.

$$\begin{array}{l} 6 - (-2) = 8 \\ 6 - (-3) = 9 \\ 6 - (-1) = 7 \end{array} \quad \begin{array}{l} 6 - x < 8 \\ \underline{-6 \quad -6} \\ -x < 2 \\ \underline{-1x < 2} \\ -x \quad -1 \\ x > -2 \end{array}$$

Examples

Section 3.2
Solving
Inequalities

$$\begin{array}{r} 7 - 2x > 21 \\ -7 \qquad \qquad -7 \\ \hline -2x > 14 \\ -2 \qquad \qquad -2 \\ \hline x < -7 \end{array}$$

Examples

Section 3.2
Solving
Inequalities

$$-3(x + 4) + 6 > 10$$

$$\begin{array}{r} -3x - 12 + 6 > 10 \\ +12 \quad -6 \quad +12 \\ \hline \end{array}$$

$$\begin{array}{r} -3x > 16 \\ \hline -3 \quad -3 \end{array}$$

$$x < -\frac{16}{3}$$

Examples

Section 3.2
Solving
Inequalities

pg 67
t-6
7-22

$$4 - (3x + 2) \geq 6 + x$$

$$4 - 3x - 2 \geq 6 + x$$

$$\begin{array}{r} -3x + 2 \geq 6 + x \\ -2 \quad -2 \end{array}$$

$$\begin{array}{r} -3x \geq 4 + x \\ -x \quad -x \end{array} \quad x \leq -1$$

$$\begin{array}{r} -4x \geq 4 \\ \hline -4 \quad -4 \end{array}$$

Homework

Section 3.2
Solving
Inequalities

Pages 67
#1 - 22 all



