

You can use a graphing calculator to find the solution set for an inequality.



Graphing Calculator Investigation

Solving Inequalities

The inequality symbols in the TEST menu on the TI-83 Plus are called *relational operators*. They compare values and return 1 if the test is true or 0 if the test is false.

You can use these relational operators to find the solution set of an inequality in one variable.



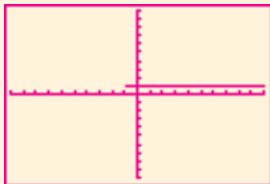
Think and Discuss

1. Clear the Y= list. Enter $11x + 3 \geq 2x - 6$ as Y1. Put your calculator in DOT mode. Then, graph in the standard viewing window. Describe the graph.
2. Using the TRACE function, investigate the graph. What values of x are on the graph? What values of y are on the graph?
3. Based on your investigation, what inequality is graphed?
4. Solve $11x + 3 \geq 2x - 6$ algebraically. How does your solution compare to the inequality you wrote in Exercise 3?

Answer

Graphing Calculator Investigation

1. The graph is of the line $y = 1$, for $x \geq -1$.



Answers (p. 37)

- | | |
|----------------------|-----------------------------|
| 4. $(-\infty, 1.5)$ | 5. $(-\infty, \frac{5}{3}]$ |
| 6. $[3, +\infty)$ | 7. $(6, +\infty)$ |
| 8. $(-\infty, -7)$ | 9. $(15, +\infty)$ |
| 10. $(-\infty, -24]$ | 11. $(-\infty, +\infty)$ |

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You can use these relational operators to find the solution set of an inequality in one variable.



Think and Discuss 1. See margin.

1. Clear the Y= list. Enter $11x + 3 \geq 2x - 6$ as Y1. Put your calculator in DOT mode. Then, graph in the standard viewing window. Describe the graph.
2. Using the TRACE function, investigate the graph. What values of x are on the graph? What values of y are on the graph? **all real numbers; 0 and 1**
3. Based on your investigation, what inequality is graphed? **$x \geq -1$**
4. Solve $11x + 3 \geq 2x - 6$ algebraically. How does your solution compare to the inequality you wrote in Exercise 3? **The solutions are the same.**



Graphing Calculator Investigation

Solving Inequalities After students enter $11x + 3$, have them press $\boxed{2nd}$ $\boxed{[MATH]}$ 4 to insert the \geq symbol before entering $2x - 6$. The values of x for which 0 is returned (where the inequality is false) are not visible on the screen because they overlay part of the x -axis. To help students realize this fact, have them use the Trace feature to travel from positive values of x to increasingly negative values of x along the graph shown in the window.