



Graphing Calculator Investigation

A Follow-Up of Lesson 6-6

TI-82

Graphing Inequalities

You can use a TI-82 graphing calculator to investigate the graphs of inequalities. Since graphing calculators only shade between two functions, enter a lower boundary as well as an upper boundary for each inequality.

Graph two different inequalities on your graphing calculator.

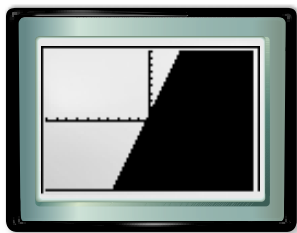
Step 1 Graph $y \leq 3x + 1$.

- Clear all functions from the Y= list.

KEYSTROKES: $\boxed{Y=}$ $\boxed{\text{CLEAR}}$

- Graph $y \leq 3x + 1$ in the standard window.

KEYSTROKES: $\boxed{2\text{nd}}$ $\boxed{\text{DRAW}}$ 7 $\boxed{(-)}$ 10 $\boxed{,}$ 3
 $\boxed{X,T,\theta}$ $\boxed{+}$ 1 $\boxed{)}$ $\boxed{\text{ENTER}}$



The lower boundary is Ymin or -10 . The upper boundary is $y = 3x + 1$. All ordered pairs for which y is less than or equal to $3x + 1$ lie below or on the line and are solutions.

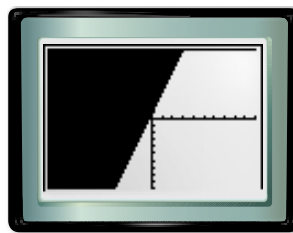
Step 2 Graph $y - 3x \geq 1$.

- Clear the drawing that is currently displayed.

KEYSTROKES: $\boxed{2\text{nd}}$ $\boxed{\text{DRAW}}$ 1

- Rewrite $y - 3x \geq 1$ as $y \geq 3x + 1$ and graph it.

KEYSTROKES: $\boxed{2\text{nd}}$ $\boxed{\text{DRAW}}$ 7 3 $\boxed{X,T,\theta}$
 $\boxed{+}$ 1 $\boxed{,}$ 10 $\boxed{)}$ $\boxed{\text{ENTER}}$



This time, the lower boundary is $y = 3x + 1$. The upper boundary is Ymax or 10 . All ordered pairs for which y is greater than or equal to $3x + 1$ lie above or on the line and are solutions.

Exercises 2b. Sample answer: $\{(0, 4), (-1, 7), (2, 6), (4.2, -1.5)\}$

- Compare and contrast the two graphs shown above. **See margin.**
- Graph the inequality $y \geq -2x + 4$ in the standard viewing window.
 - What functions do you enter as the lower and upper boundaries? $y = -2x + 4$; Ymax or 10
 - Using your graph, name four solutions of the inequality.
- Suppose student movie tickets cost \$4 and adult movie tickets cost \$8. You would like to buy at least 10 tickets, but spend no more than \$80.
 - Let x = number of student tickets and y = number of adult tickets. Write two inequalities, one representing the total number of tickets and the other representing the total cost of the tickets. $x + y \geq 10$; $4x + 8y \leq 80$
 - Which inequalities would you use as the lower and upper boundaries? $y \geq -x + 10$; $y \leq -0.5x + 10$
 - Graph the inequalities. Use the viewing window $[0, 20]$ scl: 1 by $[0, 20]$ scl: 1. **See margin.**
 - Name four possible combinations of student and adult tickets. **Sample answer:** $\{(8, 5), (10, 4), (14, 2), (20, 0)\}$

www.algebra1.com/other_calculator_keystrokes