

Extension

Use after Lesson 6.6

Solve Radical Inequalities

TEKS 2A.9.C, 2A.9.E,
2A.9.F

GOAL Solve radical inequalities by using tables and graphs.

In Chapter 4, you learned how to use tables and graphs to solve quadratic inequalities. You can also use tables and graphs to solve radical inequalities.

EXAMPLE 1 Solve a radical inequality using a table

Use a table to solve $3\sqrt{x} - 1 \leq 11$.

Solution

STEP 1 Enter the function $y = 3\sqrt{x} - 1$ into a graphing calculator.

Y1=	3*sqrt(X)-1
Y2=	
Y3=	
Y4=	
Y5=	
Y6=	
Y7=	

STEP 2 Set up the table to display x -values starting at 0 and increasing in increments of 1.

TABLE SETUP
TblStart=0
ΔTbl=1
Indpnt: Auto Ask
Depend: Auto Ask

STEP 3 Make the table of values for $y = 3\sqrt{x} - 1$. Scroll through the table to find the x -value for which $y = 11$. This x -value is 16. It appears that $3\sqrt{x} - 1 \leq 11$ when $x \leq 16$.

X	Y1
13	9.8167
14	10.225
15	10.619
16	11
17	11.369

X=16

STEP 4 Check the domain of $y = 3\sqrt{x} - 1$. The domain is $x \geq 0$, so the solutions of $3\sqrt{x} - 1 \leq 11$ cannot be negative. (This is indicated by the word ERROR next to the negative x -values.)

X	Y1
-3	ERROR
-2	ERROR
-1	ERROR
0	-1
1	2

X=-3

► The solution of the inequality is $x \leq 16$ and $x \geq 0$, which you can write as $0 \leq x \leq 16$.