Using ALTERNATIVE METHODS

Another Way to Solve Example 2, page 453

MULTIPLE REPRESENTATIONS In Example 2 on page 453, you solved a radical equation algebraically. You can also solve a radical equation using a table or a graph.

PROBLEM

WIND VELOCITY In a hurricane, the mean sustained wind velocity v (in meters per second) is given by
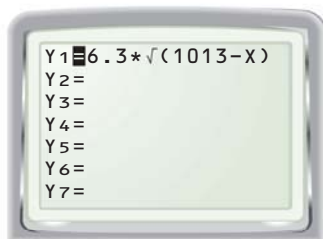
$$v(p) = 6.3\sqrt{1013 - p}$$

where p is the air pressure (in millibars) at the center of the hurricane. Estimate the air pressure at the center of a hurricane when the mean sustained wind velocity is 54.5 meters per second.

METHOD 1

Using a Table The problem requires solving the radical equation $6.3\sqrt{1013 - p} = 54.5$. One way to solve this equation is to make a table of values. You can use a graphing calculator to make the table.

STEP 1 **Enter** the function $y = 6.3\sqrt{1013 - x}$ into a graphing calculator. Note that x represents air pressure and y represents wind velocity. Set up a table to display x-values starting at 900 and increasing in increments of 10.

```
Y1=6.3*√(1013-X)
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
```

```
TABLE SETUP
  TblStart=900
  ∆Tbl=10
Indpnt: Auto Ask
Depend: Auto Ask
```

STEP 2 **Make** a table of values for the function. The first table below shows that $y = 54.5$ between $x = 930$ and $x = 940$. To approximate x more precisely, set up the table to display x-values starting at 930 and increasing in increments of 1. The second table below shows that $y = 54.5$ between $x = 938$ and $x = 939$.

X	Y1
900	66.97
910	63.938
920	60.755
930	57.396
940	53.827
X=930	

X	Y1
935	55.64
936	55.282
937	54.922
938	54.56
939	54.195
X=938	

▶ The mean sustained wind velocity is 54.5 meters per second when the air pressure is between 938 and 939 millibars.