

TEKS **a.5, a.6, 2A.2.A;**
P.3.D



Another Way to Solve Example 3, page 932

MULTIPLE REPRESENTATIONS In Example 3 on page 932, you solved a trigonometric equation algebraically. You can also solve a trigonometric equation using a table or using a graph.

PROBLEM

OCEANOGRAPHY The water depth d for the Bay of Fundy can be modeled by

$$d = 35 - 28 \cos \frac{\pi}{6.2}t$$

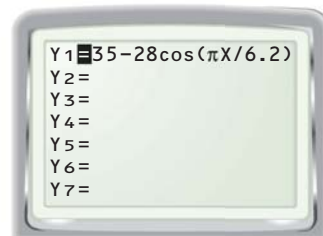
where d is measured in feet and t is the time in hours. If $t = 0$ represents midnight, at what time(s) is the water depth 7 feet?

METHOD 1

Using a Table The problem requires solving the equation $35 - 28 \cos \frac{\pi}{6.2}t = 7$.

One way to solve this equation is to make a table of values. You can use a graphing calculator to make the table.

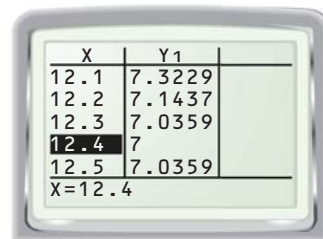
STEP 1 Enter the function $y = 35 - 28 \cos \frac{\pi}{6.2}x$ into a graphing calculator. Note that time is now represented by x and water depth is now represented by y .



STEP 2 Make a table of values for the function. Set the table so that the x -values start at 0 and increase in increments of 0.1. (Be sure that the calculator is set in radian mode.)



STEP 3 Scroll through the table to find all the times x at which the water depth y is 7 feet. On the interval $0 \leq x \leq 24$ (which represents one full day), you can see that the function equals 7 when x is 0 and 12.4.



► The water depth is 7 feet when $x = 0$ (that is, at midnight) and when $x = 12.4$ (that is, at 12:24 P.M.).