Making and Using Tables

College Algebra

Introduction

Using a table of values for a function is a good way to see overall trends while seeing exact values. With a calculator, you can generate a table of values quickly.

Steps for Making Tables on Texas Instruments Calculators

To make a table of values with a TI graphing calculator, do the following:

1. Rewrite the formula so that the independent variable is x and the dependent variable is y.
2. Press the `Y=` button on the calculator and type the formula for `Y1`.
3. Press `2ND` and `WINDOW` to get to the `TBLSET` menu.
4. Set the initial value for `TblStart` and the skip in the independent variable as `ΔTbl`.
5. Press `2ND` and `GRAPH` to see the table.

Example 1

For the first, example, we will make a table of values for the function $B = \frac{6t-1}{5t+2}$ for $t = 3, 5, 7, \ldots$

Solution

The first step is to rewrite the formula using x and y:
$$y = \frac{6x - 1}{5x + 2}$$

Notice that the values for the independent variable start at 3 and increase by 2. We will have to make that adjustment in the table settings.

The calculator steps are below. Please follow along with your calculator.

Calculator Steps	TI-84 Plus CE	TI-83 Plus
"2ND"→ "Y=" **TI-84 Plus uses "ALPHA" and "Y=" to enter fraction bar**	NORMAL FLOAT AUTO REAL RADIAN MP Plot1　Plot2　Plot3 $\blacksquare \diagdown Y_1 \blacksquare \frac{6X-1}{5X+2}$ $\blacksquare \diagdown Y_2 = \blacksquare$ $\blacksquare \diagdown Y_3 =$ $\blacksquare \diagdown Y_4 =$ $\blacksquare \diagdown Y_5 =$ $\blacksquare \diagdown Y_6 =$ $\blacksquare \diagdown Y_7 =$ $\blacksquare \diagdown Y_8 =$	Plot1　Plot2　Plot3 $\diagdown Y_1 \blacksquare (6X-1)/(5X+2)$) $\diagdown Y_2 =$ $\diagdown Y_3 =$ $\diagdown Y_4 =$ $\diagdown Y_5 =$ $\diagdown Y_6 =$
"2ND"→ "WINDOW" **Press down to access settings** **TblStart = 3** **ΔTbl = 2**	NORMAL FLOAT AUTO REAL RADIAN MP TABLE SETUP TblStart=3 ΔTbl=2 Indpnt: **Auto** Ask Depend: ▬ Ask	TABLE SETUP TblStart=3 ΔTbl=2 Indpnt: ▬ Ask Depend: **Auto** Ask
"2ND"→ "GRAPH"	NORMAL FLOAT AUTO REAL RADIAN MP PRESS + FOR ΔTbl <table><tr><td>X</td><td>Y₁</td></tr><tr><td>3</td><td>1</td></tr><tr><td>5</td><td>$\frac{29}{27}$</td></tr><tr><td>7</td><td>$\frac{41}{37}$</td></tr><tr><td>9</td><td>$\frac{53}{47}$</td></tr><tr><td>11</td><td>$\frac{65}{57}$</td></tr></table>X=3	<table><tr><td>X</td><td>Y₁</td></tr><tr><td>3</td><td>1</td></tr><tr><td>5</td><td>1.0741</td></tr><tr><td>7</td><td>1.1081</td></tr><tr><td>9</td><td>1.1277</td></tr><tr><td>11</td><td>1.1404</td></tr><tr><td>13</td><td>1.1493</td></tr><tr><td>15</td><td>1.1558</td></tr></table>X=3

The TI-84 Plus family outputs fractions whenever you use the fraction bar. We want decimals for this course. One option is to type the function just like with the TI-83 Plus. The other is to use a calculator function to convert to decimals. The steps are below.
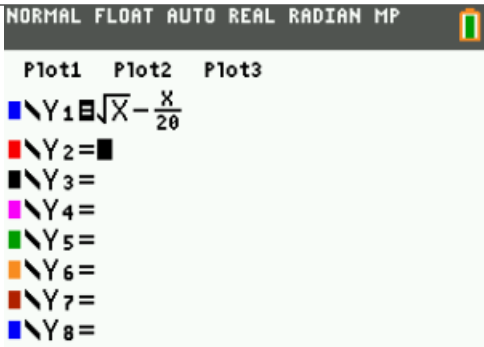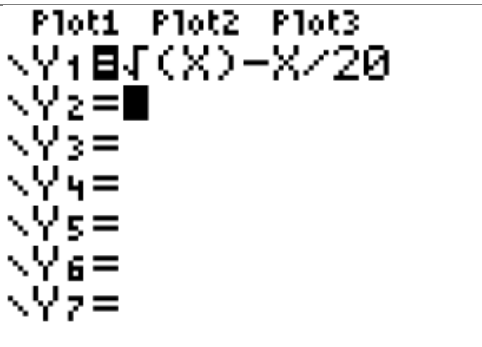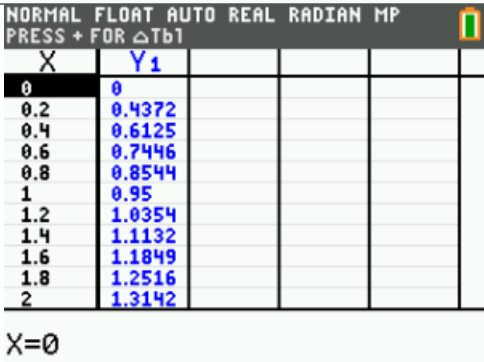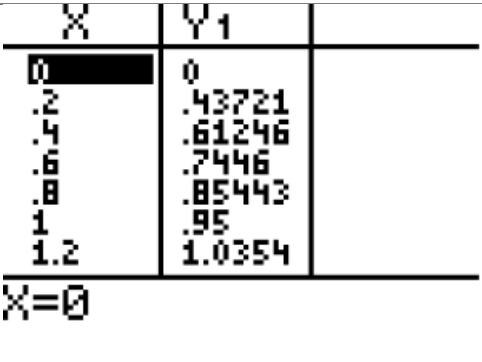
Calculator Steps	TI-84 Plus CE
"2ND" → "Y=" **Go back to the Y= menu to edit the function.**	NORMAL FLOAT AUTO REAL RADIAN MP Plot1 Plot2 Plot3 ■❭Y₁$\boxminus\frac{6X-1}{5X+2}$ ■❭Y₂= ■❭Y₃= ■❭Y₄= ■❭Y₅= ■❭Y₆= ■❭Y₇=
"MATH" → 2: ▶Dec **Converts the answers to decimals**	NORMAL FLOAT AUTO REAL RADIAN MP **MATH** NUM CMPLX PROB FRAC **1:**▶Frac 2:▶Dec 3:³ 4:³√(5:ˣ√ 6:fMin(7:fMax(8:nDeriv(9↓fnInt(NORMAL FLOAT AUTO REAL RADIAN MP Plot1 Plot2 Plot3 ■❭Y₁$\boxminus\frac{6X-1}{5X+2}$▶Dec■ ■❭Y₂= ■❭Y₃= ■❭Y₄= ■❭Y₅= ■❭Y₆= ■❭Y₇=
"2ND" → "GRAPH" **The table is now in decimals**	NORMAL FLOAT AUTO REAL RADIAN MP PRESS + FOR △Tbl <table><tr><td>X</td><td>Y₁</td><td></td><td></td><td></td></tr><tr><td>3</td><td>1</td><td></td><td></td><td></td></tr><tr><td>5</td><td>1.0741</td><td></td><td></td><td></td></tr><tr><td>7</td><td>1.1081</td><td></td><td></td><td></td></tr><tr><td>9</td><td>1.1277</td><td></td><td></td><td></td></tr><tr><td>11</td><td>1.1404</td><td></td><td></td><td></td></tr><tr><td>13</td><td>1.1493</td><td></td><td></td><td></td></tr><tr><td>15</td><td>1.1558</td><td></td><td></td><td></td></tr><tr><td>17</td><td>1.1609</td><td></td><td></td><td></td></tr><tr><td>19</td><td>1.1649</td><td></td><td></td><td></td></tr><tr><td>21</td><td>1.1682</td><td></td><td></td><td></td></tr><tr><td>23</td><td>1.1709</td><td></td><td></td><td></td></tr></table> X=3

Example 2

For our second example, we will create a table of values for $y = \sqrt{x} - \frac{x}{20}$ for $x = 0, 0.2, 0.4, \ldots$

Solution

The process is very similar to the last problem. Follow along on your calculator.

Calculator Steps	TI-84 Plus CE	TI-83 Plus
"2ND" → "Y=" TI-84 Plus uses "ALPHA" and "Y=" to enter fraction bar	NORMAL FLOAT AUTO REAL RADIAN MP Plot1 Plot2 Plot3 ■\Y1=$\sqrt{X}-\frac{X}{20}$ ■\Y2=■ ■\Y3= ■\Y4= ■\Y5= ■\Y6= ■\Y7= ■\Y8=	Plot1 Plot2 Plot3 \Y1=$\sqrt{}$(X)−X/20 \Y2=■ \Y3= \Y4= \Y5= \Y6= \Y7=
"2ND" → "WINDOW" Press down to access settings TblStart = 0 ΔTbl = 0.2	NORMAL FLOAT AUTO REAL RADIAN MP TABLE SETUP TblStart=0 ΔTbl=0.2 Indpnt: ▣ Ask Depend: ▣Auto Ask	TABLE SETUP TblStart=0 ΔTbl=.2 Indpnt: ▣ Ask Depend: Auto Ask
"2ND" → "GRAPH" This time, the TI-84 converts answers to decimals due to the square root.	NORMAL FLOAT AUTO REAL RADIAN MP PRESS + FOR ΔTbl <table><tr><td>X</td><td>Y1</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0.2</td><td>0.4372</td></tr><tr><td>0.4</td><td>0.6125</td></tr><tr><td>0.6</td><td>0.7446</td></tr><tr><td>0.8</td><td>0.8544</td></tr><tr><td>1</td><td>0.95</td></tr><tr><td>1.2</td><td>1.0354</td></tr><tr><td>1.4</td><td>1.1132</td></tr><tr><td>1.6</td><td>1.1849</td></tr><tr><td>1.8</td><td>1.2516</td></tr><tr><td>2</td><td>1.3142</td></tr></table>X=0	<table><tr><td>X</td><td>Y1</td></tr><tr><td>0</td><td>0</td></tr><tr><td>.2</td><td>.43721</td></tr><tr><td>.4</td><td>.61246</td></tr><tr><td>.6</td><td>.7446</td></tr><tr><td>.8</td><td>.85443</td></tr><tr><td>1</td><td>.95</td></tr><tr><td>1.2</td><td>1.0354</td></tr></table>X=0

Next Up

Now that we know how to make tables of values, we'll talk about limiting values.