TI–83 Lab 5 For Mathematics 223

Topics: limits and TABLE, piecewise functions

Limits and TABLE We will use the TABLE function of the calculator to find of the limit of $f(x) = \frac{(2x-3)(0.5x+1)}{2x-3}$ at $x = 1.5$.

1. Set the WINDOW parameters as Xmin = -5, Xmax = 5, Xscl = 1, Ymin = -5, Ymax = 5, Yscl = 1, Xres = 1.

2. Type $y = \frac{(2x-3)(0.5x+1)}{2x-3}$ into Y=.

3. Set the various parameter values of the TABLE as follows: TblStart = 0, ΔTbl = 1, Indpnt: Ask, Depend: Auto.

4. Now type 2nd TABLE and type in the following values in X; the values of $f(x) = \frac{(2x-3)(0.5x+1)}{2x-3}$ (Y1) automatically appear in the next column.

$x \rightarrow$	1.4	1.49	1.499	1.4999	1.49999
$f(x) = \frac{(2x-3)(0.5x+1)}{2x-3} \rightarrow$	1.7	1.745	1.7495	1.75	1.75

1.50001	1.5001	1.501	1.51	1.6	$\leftarrow x$
1.75	1.7501	1.7505	1.755	1.8	$\leftarrow f(x) = \frac{(2x-3)(0.5x+1)}{2x-3}$

These two tables clearly indicate that the limit is equal to 1.75 at $x = 1.5$

Piecewise Functions We will graph the piecewise function:

$$f(x) = \begin{cases} 2x+4 & \text{if } x \leq -1 \\ 2x^3 - 4x & \text{if } -1 < x < 1.5 \\ -2x^2 + 2x - 2 & \text{if } 1.5 \leq x, \end{cases}$$

1. Set the WINDOW parameters as Xmin = -5, Xmax = 5, Xscl = 1, Ymin = -5, Ymax = 5, Yscl = 1, Xres = 1.

2. Type $y = (2x+4)(X \leq -1)+(2x^3-4x)(x > -1)(x < 1.5)+(-2x^2+2x-2)(x \geq 1.5)$ into Y=.