Trapezium Rule-2

Select TABLE mode from the main menu by using the arrow keys to highlight the TABLE icon or pressing 7.

Note: Area = $\frac{1}{2}h[y_0 + 2y_1 + 2y_2 + \ldots\ldots 2y_{n-1} + y_n]$

Where $h = \frac{x_n - x_0}{n}$

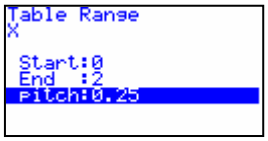
Also known as the trapezoidal rule

You can remember what is inside the $[y_0 + 2y_1 + 2y_2 + \ldots\ldots 2y_{n-1} + y_n]$ **by the sequence: 1 2 2 2 2 2 . . . . . 2 2 2 1**

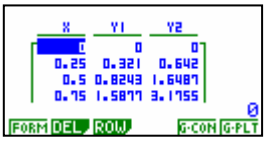
Example: Calculate the area bounded by the x-axis and the curve $y = x.e^x$ between x = 0 and x = 2 , in steps of 0.25.

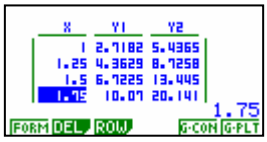
Answer: Enter **TABLE** mode and enter in the Function:
$x.e^x$ in the Y1 space and
$2(x.e^x)$ in the Y2 space.

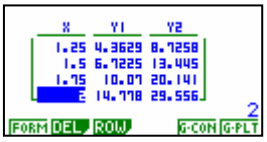
Select **F5 RANG**e to enter x = 0, the **Start** value and x = 2, the **End** value and **pitch** to .25, being the step length.
Then **EXIT.**



To create the table of values, x, Y1 and Y2 press the **F6** key







Reading off the required values from Y1:

Area = ½ x .25 x [0 + 2x0.321 + 2x0.824 + 2x1.588 + 2x2.718 + 2x4.363 + 2x6.723 + 2x10.07 + 14.778]
= 0.125x[0 + 0.642 + 1.648 + 3.176 + 5.436 + 8.726 + 13.446 + 20.14 + 14.778]
= 0.125x 69.992
= 8.499 sq units

OR reading off the required values from Y1 and Y2:

Area = ½ x 0.25 x [0 + 0.642 + 1.648 + 3.176 + 5.436 + 8.726 + 13.446 + 20.14 + 14.778]
= 0.125x 69.992
= 8.499 sq units