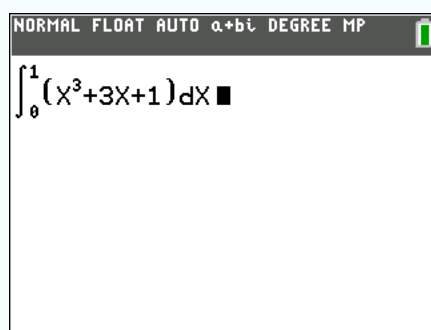## 5.5 Definite integrals

5.5.1 Compute the definite integral of a function

Suppose you want to compute the following definite integral:

$$\int_0^1 (x^3 + 3x + 1)\mathrm{d}x$$

In the main screen, press **math** (test A), `fnInt(`, and fill the parameters as follows:

```
NORMAL FLOAT AUTO a+bi DEGREE MP

 1
∫ (X³+3X+1)dX ■
 0
```

The result should be 2.75.

5.5.2 Draw the area under a curve

Suppose you want to draw the area between 0 and 1 of the following function:

$$f(x) = x^3 + 3x + 1$$

① Enter the function by pressing **y=** (stat plot f1)

② choose an appropriate window (with **window** (tblset f2)). Here we chose `Xmin=-1`, `Xmax=3`, `Ymin=-1` and `Ymax=30`

③ Press **graph** (table f5) , **2nd** **trace** (calc f4) , `∫f(x)dx`. Press **0** (catalog ⌐) **enter** (entry solve) to set lower limit at $x = 0$, and **1** (L1 Y) **enter** (entry solve) to select upper limit at $x = 1$. The following should be displayed:
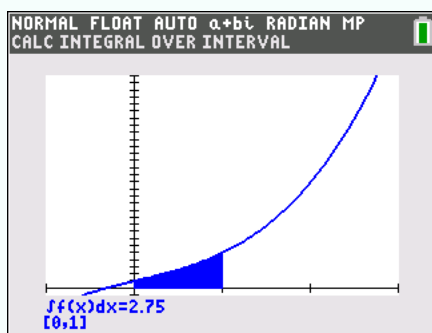
2.75 is the area of the blue region.

[0,1] is the interval