

Chapter 11 / **Example 16****Area between a curve and the y-axis**

Find the area of the region bounded by the curve $y = x^2$ and the y-axis, $x \in [-2, 0]$.

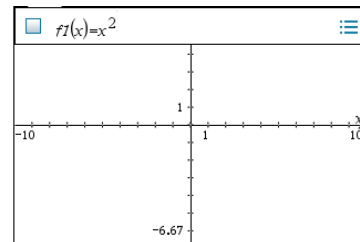
Open a new document and add a Graphs page.

The entry line is displayed at the top of the work area.

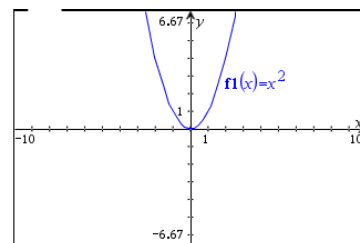
The default graph type is function, so ' $f1(x)=$ ' is displayed.

The default axes are $-10 \leq x \leq 10$ and $-6.67 \leq y \leq 6.67$.

Type x^2 and press **enter**.



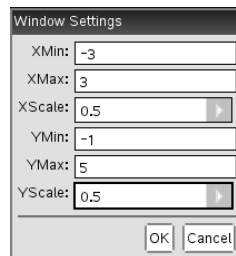
The GDC displays the graph $f1 \ x = x^2$ with the default axes.



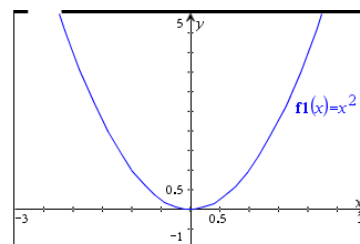
Press **menu** 4:Window/Zoom | 1:Window Settings...

Set the axes to show $-3 \leq x \leq 3$ and $-1 \leq y \leq 5$ with the scales set to 0.5.

Press **enter** when you have finished.



The GDC displays the graph $f1 \ x = x^2$

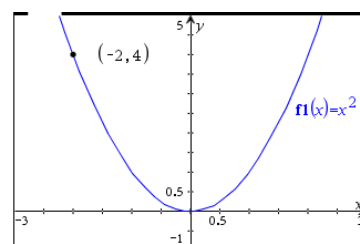


To find the y-intercept press **menu** 5:Trace | 1:Graph Trace

Type -2 and press **enter** to change the x coordinate to -2.

Press **enter** again and then press **esc** to leave the graph trace mode.

The GDC shows the point $-2, 4$.



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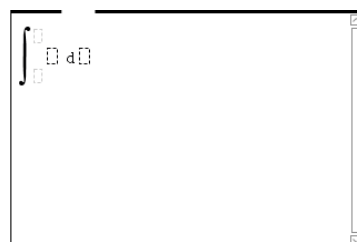
It $y = x^2$ then $x = \sqrt{y}$.

The area is $\int_0^4 \sqrt{y} \, dy$

Press **ctrl** **doc** **(+page)** and add a new Calculator page.

Press **int** and select **\int_a^b** with the trackpad.

The template shows places for the limits, the function and the variable that you are integrating with respect to.



Enter the lower limit 0 and using the upper limit 4.

Enter the function \sqrt{y}

Use **◀▶▲▼** to navigate around the template.

Type y .

Press **enter**.

$$\int_0^4 \sqrt{y} \, dy = 5.33$$

