

Chapter 10 / **Example 14**

Find the area of a region bounded by curves

Find the area of the region between the curves $f(x) = x^3 - 3x^2 + 3x$ and $g(x) = x^2$.

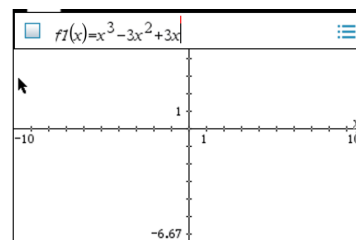
Open a new document and add a Graphs page.

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 $-6.67 \leq y \leq 6.67$.

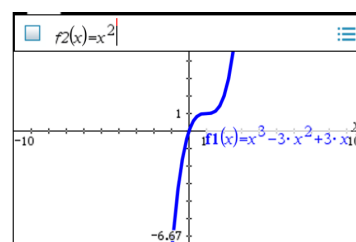
Type $x^3 - 3x^2 + 3x$ and press **enter**.



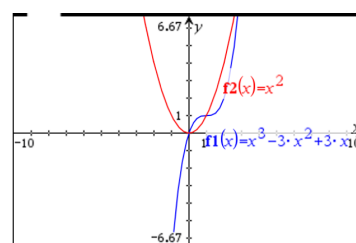
The GDC displays the curve $f1(x) = x^3 - 3x^2 + 3x$ in the default window.

Press **tab** to display the entry line again. This time 'f2(x)= ' is displayed.

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



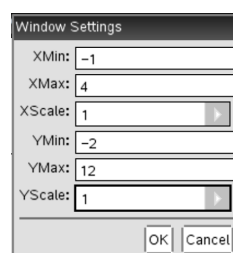
The GDC displays the curve $f1(x) = x^3 - 3x^2 + 3x$ and the line $f2(x) = x^2$ in the default window.



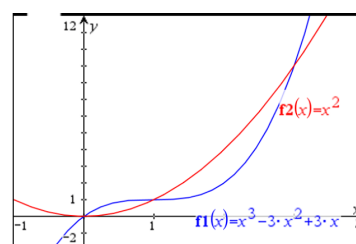
To view the curves in a suitable window Press **menu** 4:Window/Zoom | 1:Window Settings...

Set the axes to show $-1 \leq x \leq 4$ and $-2 \leq y \leq 12$ and set the scales to 1.

Press **enter** when you have finished.



The GDC displays the curve $f1(x) = x^3 - 3x^2 + 3x$ and the line $f2(x) = x^2$ in a suitable window.



Chapter 10 / **Example 14**

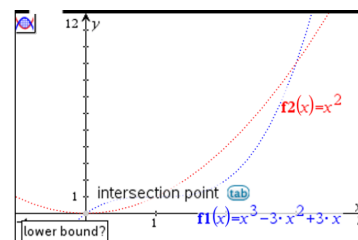
Find the area of a region bounded by curves

To find the area bounded by the two curves press

menu 6:Analyze Graph | 7:Bounded Area.

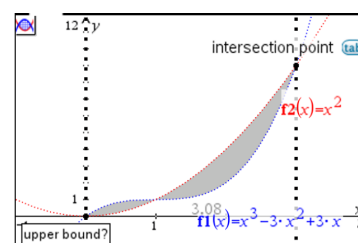
Use the touchpad to move the cursor to the first of the two intersection points. The GDC displays the words 'intersection point' when you are close enough.

Click the touchpad.



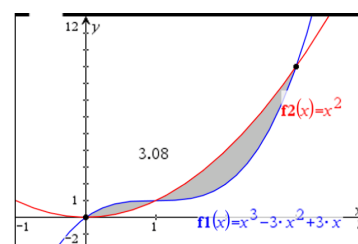
Use the touchpad to move the cursor to the second of the two intersection points. The GDC displays the words 'intersection point' when you are close enough.

Click the touchpad again.



The GDC displays a shaded region between the two curves and the value of its area.

The area of the region is 3.08.



To change the precision of the displayed value press

menu:1Actions | 4:Attributes.

Use the touchpad to select the value of the area.

Use the **►** key or press **4** **enter** to change the precision from 3 to 4.

Press **enter**.

The area is 3.0833 to 4dp.

The values you enter here will depend on what the default settings are on your GDC. These may also be in significant figures or decimal places.

