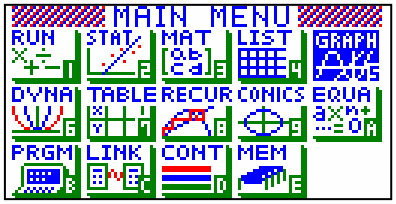
INTEGRATION WITH A GRAPH

Select **GRAPH** mode from the main menu by using the arrow keys to highlight the **GRAPH** icon or pressing 5.



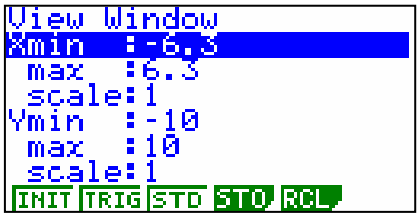
The integral finds the area under the curve. The calculator can integrate with values of x only
i.e. a lower bound and an upper bound is required.

[Note: that areas below the x-axis are negative values and areas above the x-axis are positive]

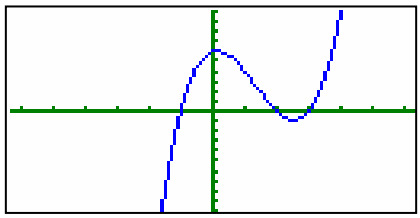
Example 1:

Find the **area** between the curve y = (x + 1)(x – 2)(x –3) between x = -1 and x = 3

A quick pencil sketch of the graph is helpful here.



Entering the function into Y1. Setting up the x and y axes.



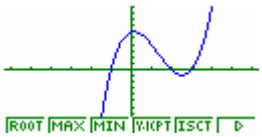
Graphing the function.

Solution Method 1:

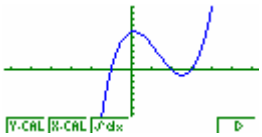
So we need to do the integration in two parts:

That is, find the integral of y = (x + 1)(x – 2)(x –3) between x = -1 and x = 2

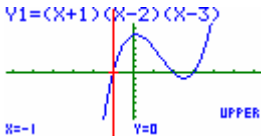
And also find the integral of y = (x + 1)(x – 2)(x –3) between x = 2 and x = 3



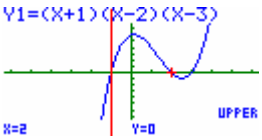
Shift F5 for G-SOLVe



F6

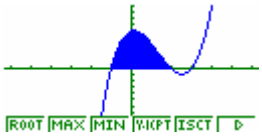


F3 then R arrow for position, **EXE**

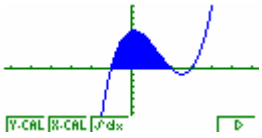


R arrow for position, **EXE**

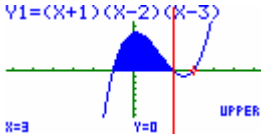
Displayed result



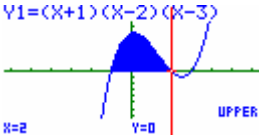
Shift F5 for G-SOLVe



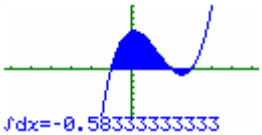
F6



F3 then R arrow for position, **EXE**



R arrow for position, **EXE**



Displayed result

Then add the two positive answers together

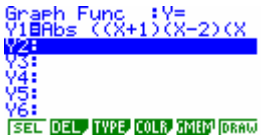
Solution Method 2:

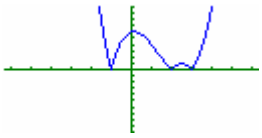
Using the absolute value function [All of the graph is above the x axis]

Entry by: OPTN key then F6 key and then F4 key

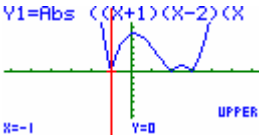
Type in the equation to be integrated,

i.e. of y = Abs((x + 1)(x – 2)(x –3)) in the **Y1** space.

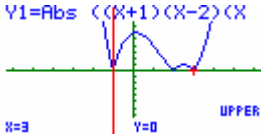




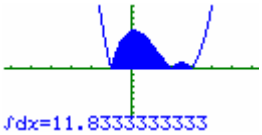
Shift F5 for G-SOLVe then **F6**



F3 then R arrow for position, **EXE**



F3 then R arrow for position, **EXE**



Displayed answer.

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