Volume of revolution –Part 2

Select GRAPH mode and RUN mode from the main menu by using the arrow keys: - to highlight the RUN icon or pressing 1.

- to highlight the GRAPH icon or pressing 5.

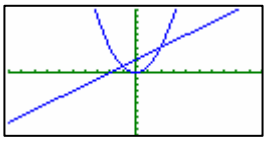
Volume of revolution V = $\int_a^b \pi [f(x)]^2 dx$, where a and b are the lower and upper bound respectively.

Example: Find the volume generated by revolving the area between the line $y = x + 2$ and $y = x^2$ about the x axis.

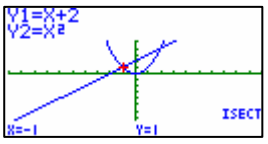
Answer: A picture of what is required is helpful here.
In **GRPH** Mode, Press **5** from the **MAIN MENU**
Enter into the calculator $y = x + 2$ and $y = x^2$
Into the Y1 and Y2 spaces.

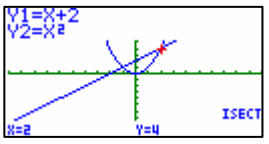
Set up the **VIEW-Window** to a **STD** window, **F3**, then **EXIT.**

Draw the graphs of $y = x + 2$ and $y = x^2$ by pressing **F6** or the **EXE** key.



Now, a **G-SOLV**e, **SHIFT** **F5** , then **F5** to find the intersection points.



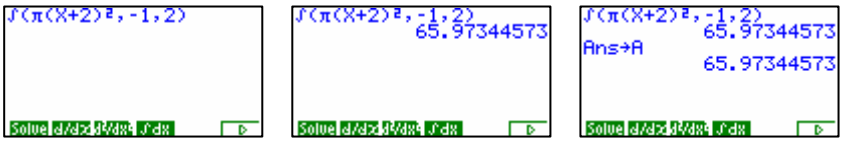


The intersection points are (-1 , 1) and (2 , 4).

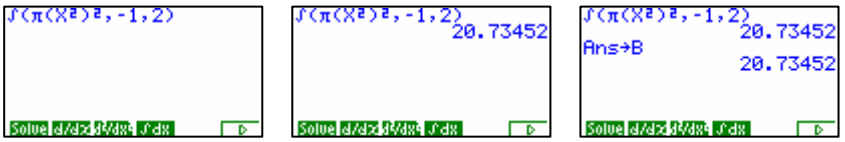
Once the intersection points have been found the volume of revolution formula can be used in **RUN Mode**, from the main menu.

The x –values are x = -1 and x = 2 for the lower and upper bound of the integration.

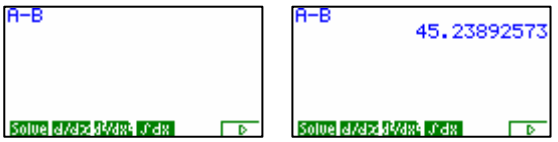
Enter in ? p **$(x+2)^2$,-1,2** then press **EXE** record the answer, by storing it in a memory space.



Enter in ? p**$(x^2)^2$,-1,2** then press **EXE** record the answer, by storing it in a memory space.



Calculate the answer A – B



The volume generated is **45.239 (3 d.p.) units^3**