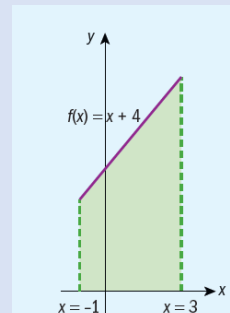


Chapter 11 / **Example 2**

# Using the GDC to evaluate areas

Find the area shown by

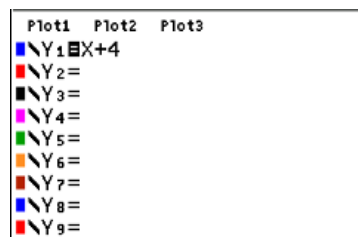
- a** using the formula for the area of a trapezium  
**b** using the integral function on your calculator.



The area is  $\frac{1}{2} \cdot 4(3 + 7) = 20$ .

Press **[F1]** **[Y=]** to display the equation entry screen.

Type  $x + 4$  and press **[ENTER]** to enter the equation as  $Y_1$ .



Press **[F2]** **[WINDOW]**

Set the axes to show  $-2 \leq x \leq 4$  and  $-1 \leq y \leq 8$

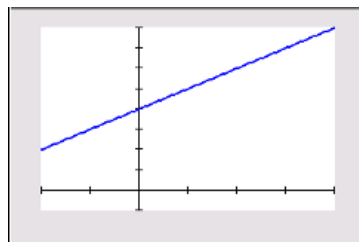
You can leave the other items as they are.

Press **[F5]** **[GRAPH]** when you have finished.

```

WINDOW
Xmin=-2
Xmax=4
Xscl=1
Ymin=-1
Ymax=8
Yscl=1
Xres=1
ΔX=.02272727272727
TraceStep=.04545454545454
  
```

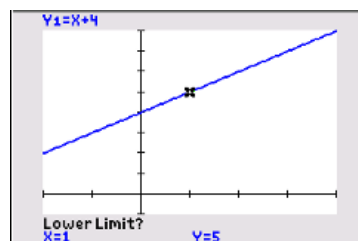
The GDC now displays the function  $Y_1 = x + 4$ .



To find the integral press **[2nd]** **[F4]** **[CALC]** **7: ∫f(x)dx**

To find the area you need to give the lower and upper limits of the region.

The GDC asks you to set the lower limit.

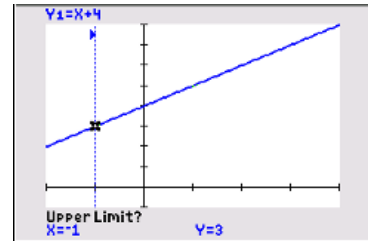


Chapter 11 / **Example 2**

## Using the GDC to evaluate areas

Type - 1 and press **[ENTER]**.

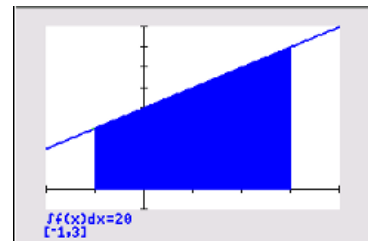
The GDC asks you to set the upper limit.



Type 3, the upper limit, and press **[ENTER]**.

The GDC shows the area defined by the integral and its value.

$$\int_{-1}^3 x + 4 \, dx = 20$$

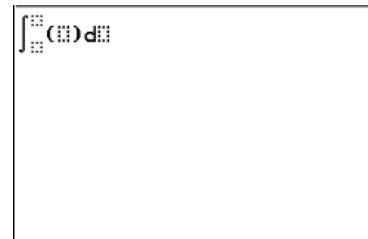


The integral can also be calculated without the need for a graph.

Press **[2nd]** **[QUIT]**.

To enter the integral template press **[ALPHA]** **[F2]** 4:fnInt(.

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



Enter the lower limit - 1 and using the upper limit 3.

Enter the function  $x + 4$

Use **[←]** **[→]** **[↑]** **[↓]** to navigate around the template.

Type X.

Press **[ENTER]**.

$$\int_{-1}^3 x + 4 \, dx = 20$$

