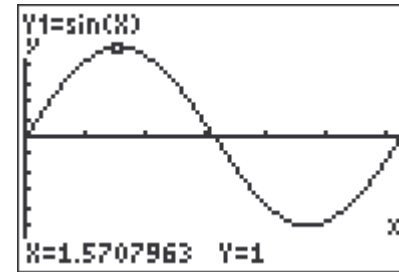
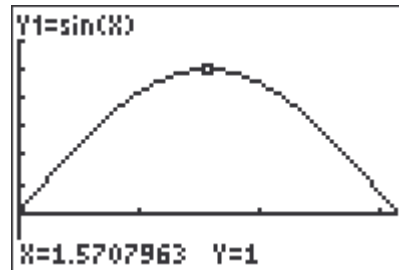


How much area lies under one arch of a sine curve?

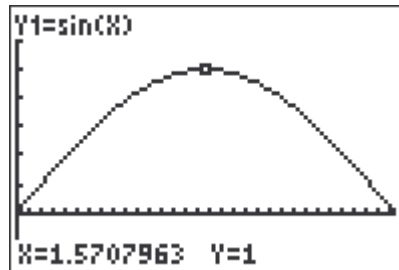
$$y = \sin x$$



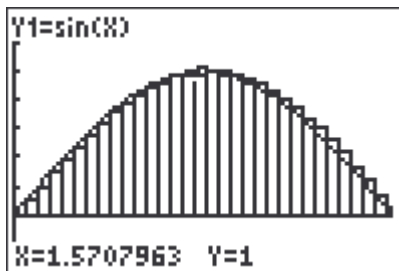
Focus on one arch



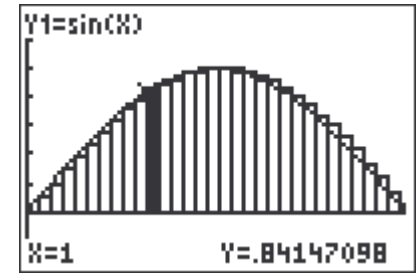
Split x -axis up into small intervals of width 0.1



For each interval draw a rectangular strip to the height of the sine curve.



The strip at $x = 1$ has height ≈ 0.8414
 and width = 0.1
 to give $A \approx 0.1(0.8414)$
 ≈ 0.08414



If we add up all the strips we will have an approximation of the area below the arch,

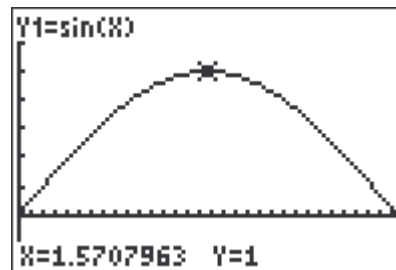
We could trace to each of the strips, find its height and work out its area, but it can be done more quickly and more accurately using the calculator's list facility.

L1 holds the x values,
 L2 holds the y values
 $L3 = 0.1 * L2$ places the area of each strip into list 3.

| L1 | L2 | L3 |
|----|--------|-------|
| 0 | 0 | ----- |
| .1 | .09983 | |
| .2 | .19867 | |
| .3 | .29552 | |
| .4 | .38942 | |
| .5 | .47943 | |
| .6 | .56464 | |

L3 = 0.1 * L2

Summing the individual areas in L3 gives the result that the area under one arch of the graph of $y = \sin x$ is $A \approx 2.000$ (3dp)



```

CALCULATE
1:value
2:zero
3:minimum
4:maximum
5:intersect
6:dy/dx
7:∫f(x)dx
  
```

