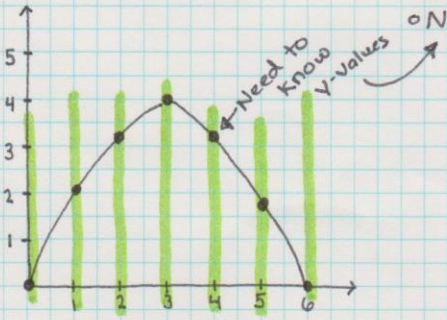
x	y
0	0
1	$\frac{20}{9} = 2.22$
2	$32/9 = 3.56$
3	4
4	$32/9 = 3.56$
5	$20/9 = 2.22$
6	0

use two/three decimals on table

Interval boundaries



break into 6 intervals for better approximation

Need equation: $y = a(x-h)^2 + k$

vertex: $(h,k) \rightarrow (3,4)$

→ Need another point to find "a" $(x,y) \rightarrow (6,$

So $y = a(x-h)^2 + k$

$0 = a(6-3)^2 + 4$

$0 = a(3)^2 + 4$

$-4 = 9a \Rightarrow a = -4/9$

rewrite only using "a", "

equation: $y = -4/9(x-3)^2 + 4$

Left Hand:

area = 0

so don't have to use

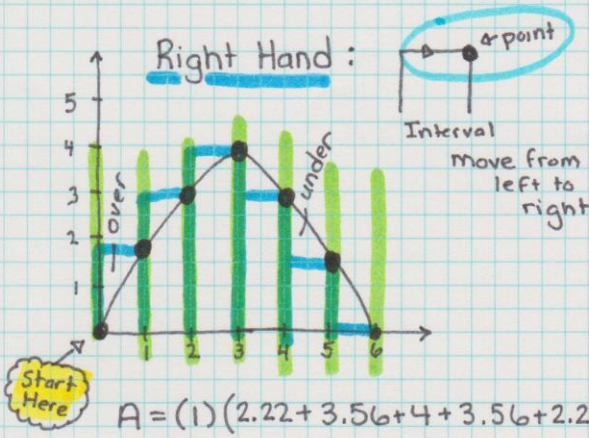
$A = b \cdot h \rightarrow$ add all rectangles

So $A = b \cdot (h_1 + h_2 + \cdots + h_n)$

$A = (1) \cdot (2.22 + 3.56 + 4 + 3.56 + 2.22)$

$A = 15.56 \text{ units}^2$

Right Hand:

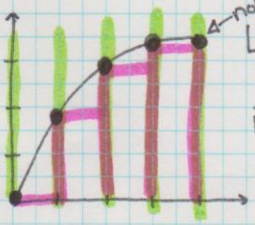


$A = (1)(2.22 + 3.56 + 4 + 3.56 + 2.22 + 0)$ not ne

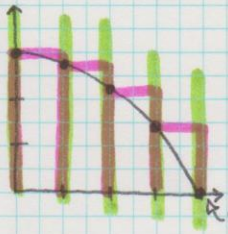
$A = 15.56 \text{ units}^2$

* areas are equal because from [0,6] the parabola is symmetrical across $x = 3$

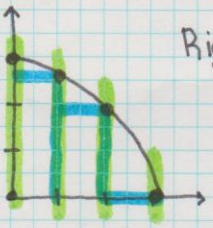
General Observation →



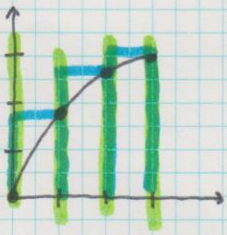
Left Hand on increasing is under-estimate



Left Hand on decreasing is over-estimate



Right Hand on decreasing is under-estimate



Right Hand on increasing is over-estimate

To get a good approximation: $\frac{LHR + RHR}{2}$

Calculator: Method 1

Math → 9 fnInt(

$\int_{\square}^{\square} (\square)\, d\square$

upper bound, lower bound, equation *original*, variable

Method 2: More visual

Y= to enter equation

2nd → Trace → 7 $\int f(x)dx$

enter lower & upper bound