Moving on....

Find the antiderivative of each function.

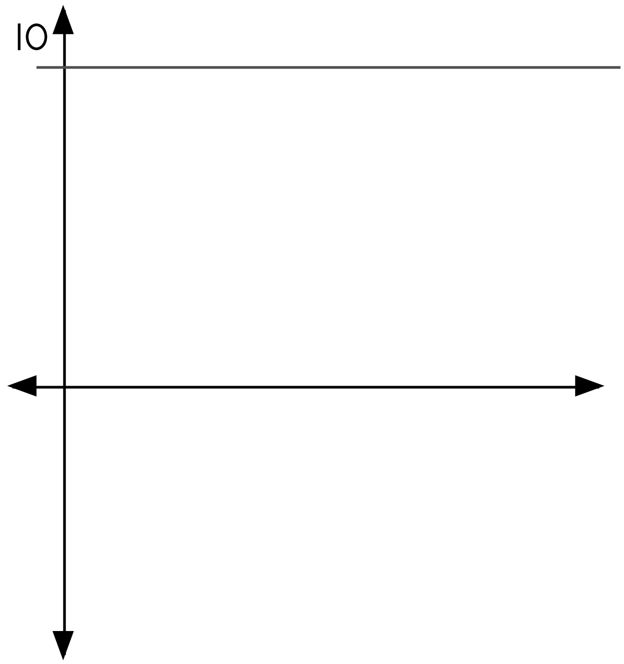
2. $y = -3x^8 + 4$

3. $y = \dfrac{(\ln x)^4}{x}$

4. $y = \dfrac{6x^2}{2x^3 - 7}$

5. Fill in the chart for the function $y = 10$

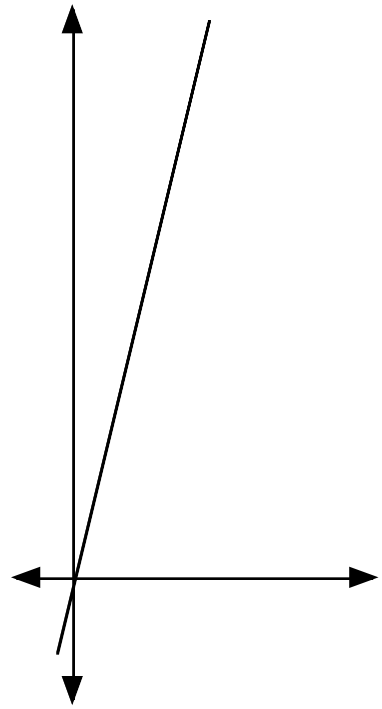
x	y	A(x)	Δ A(x) (between the two values)
0			
1			
2			
3			
3.5			
4			
4.5			
4.6			
4.7			
4.8			



How could we express the change in area between any two x values?

6. Fill in the chart for the function y = 6x

x	y	A(x)	Δ A(x) (between the two values)
1			
2			
3			
3.5			
4			
4.5			
4.6			
4.7			
4.8			
4.81			
4.82			
4.821			

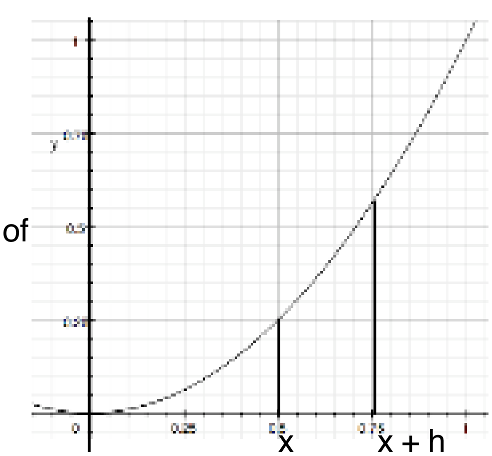


What happens to Δ A(x) as we take smaller and smaller intervals of x?

6. Let's remind ourselves of how we got the derivative....

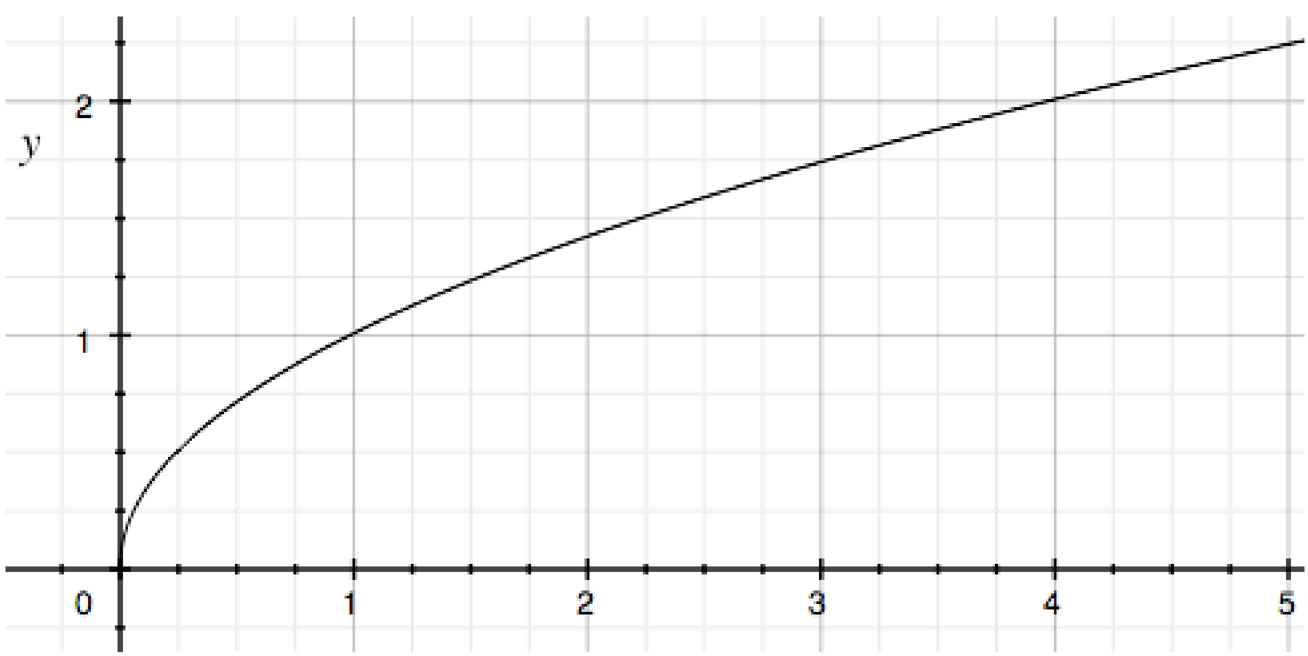
a) What is a derivative? (What does it tell us about a function?)

b) Use the formal "limit" definition of a derivative to find the derivative of $y = x^2$



7. What happens to the $\Delta A/\Delta x$ as Δx approaches 0 ?

8. Find the area under the curve $y = \sqrt{x}$ from 0 to 5.



Name: ___________________________

CLASSWORK 101

1. Picking up where we left off...

a) What's the problem with finding an area when it is created by a curvy graph like $y = x^2$?

b) What strategy can we use to approximate the area under such a graph?

c) Let's use 20 rectangles to find the area under the curve $y = x^2$.

x	y	width	new rectangle	x	y	width	new rectangle
.05				.55			
.1				.6			
.15				.65			
.2				.7			
.25				.75			
.3				.8			
.35				.85			
.4				.9			
.45				.95			
.5				1			

Total area from 0 to 1 is approximately:

d) Let's use the same process to find the area under the curve $y = x^3$.

x	y	width	new rectangle	x	y	width	new rectangle
.05				.55			
.1				.6			
.15				.65			
.2				.7			
.25				.75			
.3				.8			
.35				.85			
.4				.9			
.45				.95			
.5				1			

Total area from 0 to 1 is approximately:

e) What about $y = x^4$?

x	y	width	new rectangle	x	y	width	new rectangle
.05				.55			
.1				.6			
.15				.65			
.2				.7			
.25				.75			
.3				.8			
.35				.85			
.4				.9			
.45				.95			
.5				1			

Total area from 0 to 1 is approximately:

What's going on here??