Name: ___________________________

CLASSWORK 100

Find the antiderivative of each function.

1. $y = 4x^7$

2. $y = (\cos^{-1/2} x) \sin x$

3. $y = \dfrac{4}{4x + 2}$

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

5. $y = e^x(x + 1)$

6. We are going to examine the area under the curve $y = x^2$ from 0 to 1.

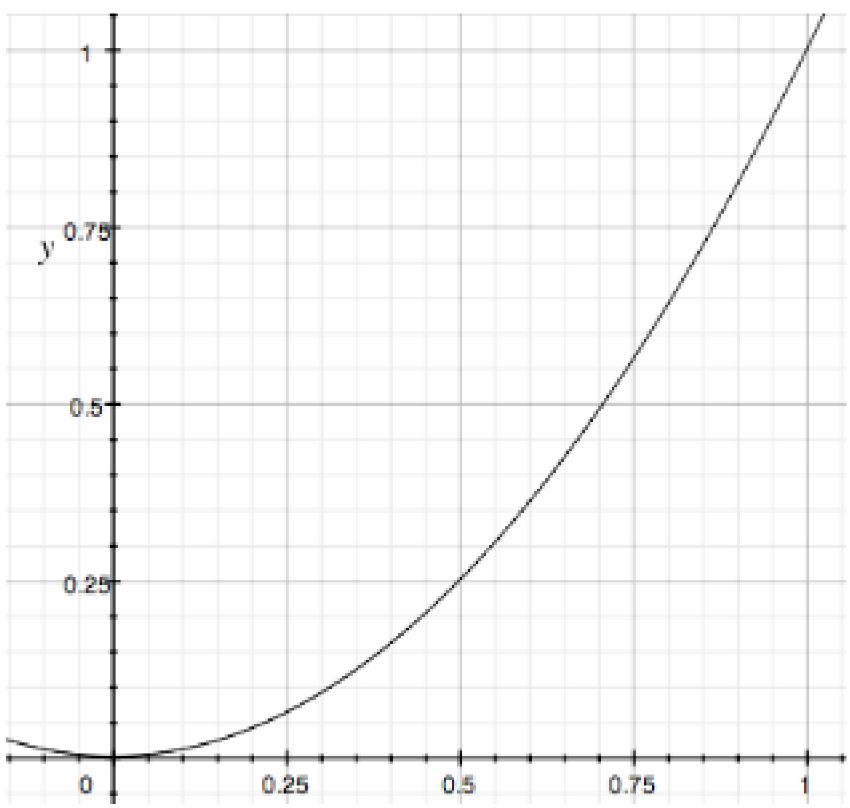
a) Why is it difficult to come up with a formula for this area?

b) Approximate the area under the curve by using one rectangle.

x	y	A(x)
1		

c) Approximate the area under the curve by using 2 rectangles.

x	y	A(x)
.5		
1		



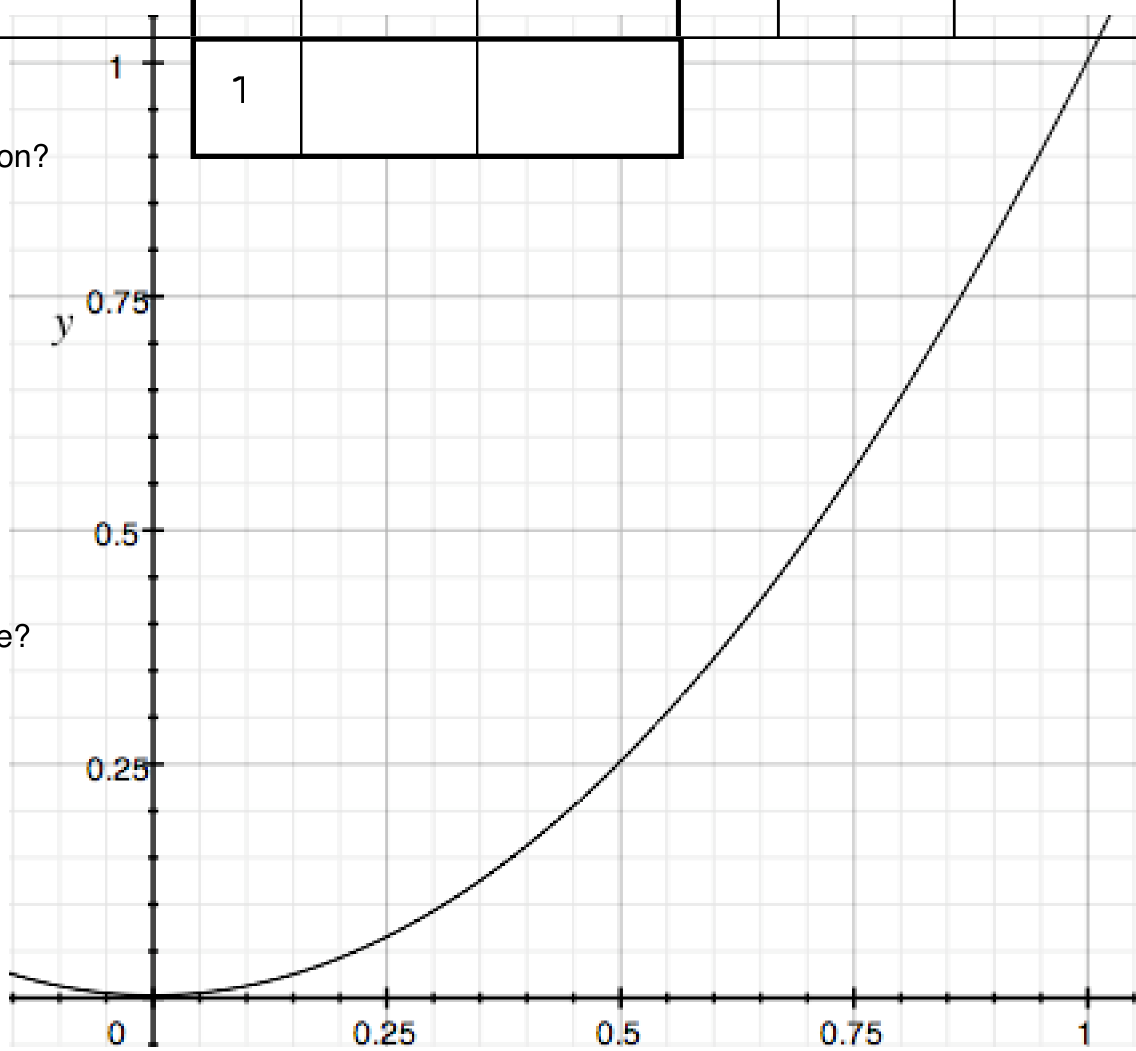
d) Approximate the area under the curve by using 5 rectangles.

x	y (height)	width (Δx)	new rectangle	A(x) (total area)
.2				
.4				
.6				
.8				
1				

e) Approximate the area under the curve by using **10** rectangles.

x	y	A(x)	x	y	A(x)	x	y	A(x)
.1			.4			.7		
.2			.5			.8		
.3			.6			.9		
			1					

f) What would we have to do to get a better approximation?

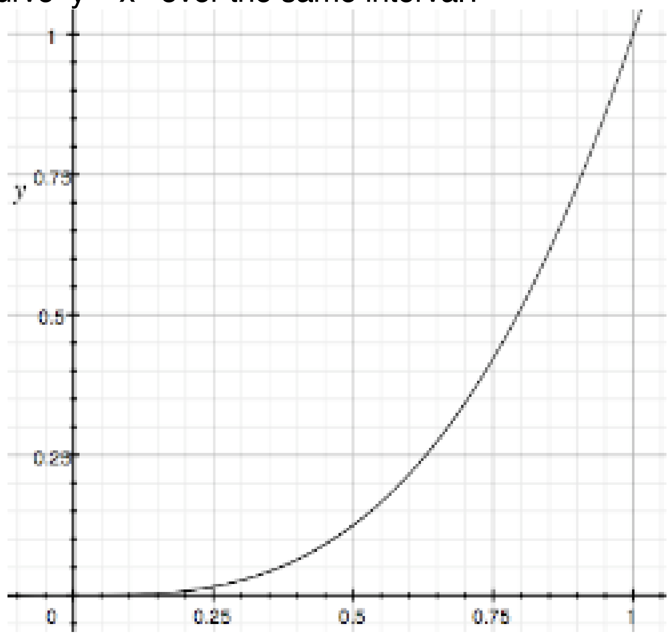


g) What does it look like the answer might be?

h) Why might this be? How does this relate to calculus?

7. Let's examine the area under the curve $y = x^3$ from 0 to 1. Start by using 4 rectangles. Should this area be smaller or larger than the area under the curve $y = x^2$ over the same interval?

x	y	new rectangle width=	A(x)
.25			
.5			
.75			
1			



Let's try again using 10 rectangles.

x	y	new rectangle width =	A(x)	x	y	new rectangle width =	A(x)
.1				.6			
.2				.7			
.3				.8			
.4				.9			
.5				1			

6. Now let's repeat the same process for $y = x^4$. What is going on here???

x	y	new rectangle width =	A(x)	x	y	new rectangle width =	A(x)
.1				.6			
.2				.7			
.3				.8			
.4				.9			
.5				1			