**Name:** _____

## CLASSWORK 104

Find the antiderivative of each function.

1. $y = 3x^{1/2}$

2. $y = \frac{7}{x}$

3. $y = \frac{\cos x}{\sin x}$

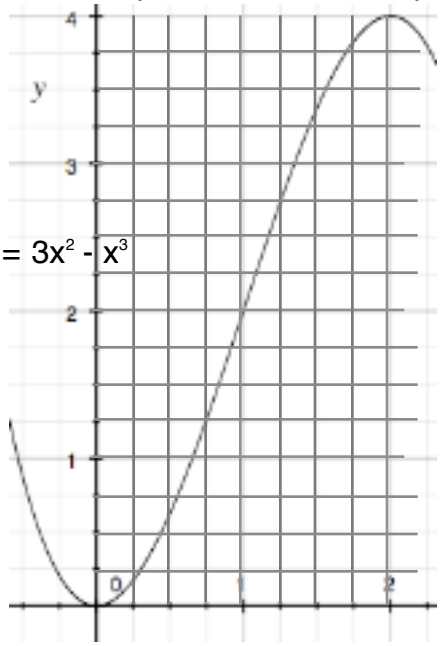
4. a) Use calculus to find the area under the curve $y = 3x^2$ from 0 to 2.

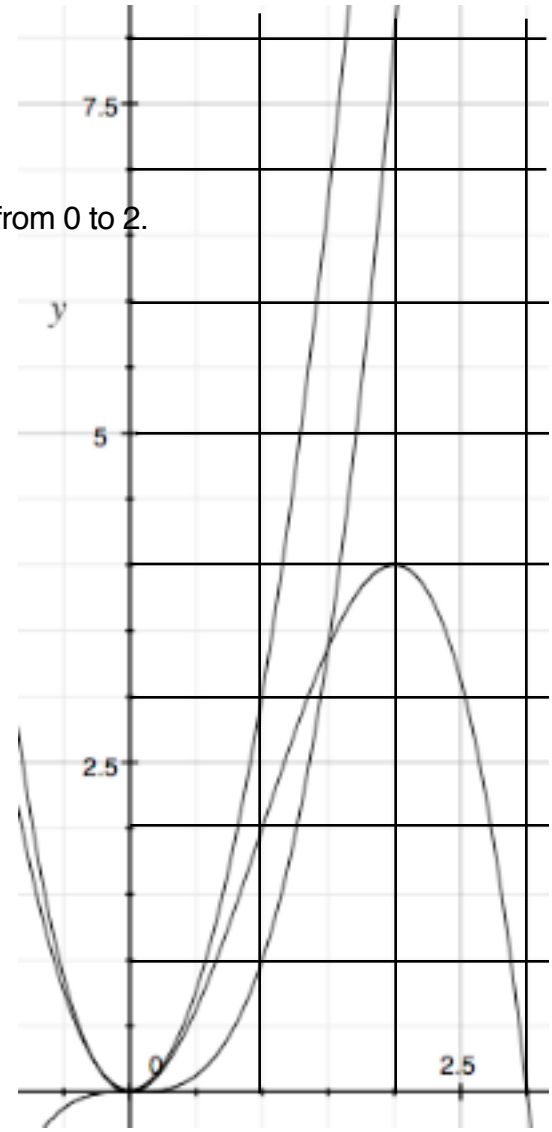
b) Use calculus to find the area under the curve $y = x^3$ from 0 to 2.

c) Use calculus to find the area under the curve $y = 3x^2 - x^3$ from 0 to 2.

d) Use the pictures below to explain your answers.

$y = 3x^2 - x^3$



6. a) Find the area under the curve $y = 2x - 4$ from 0 to 4 using calculus.

b) Explain why that answer makes sense (draw a picture).

7. a) Find the area under the curve $y = x^2 - 4x$ from 0 to 4.

b) When does this area switch from negative to positive?

c) Relate this answer to your answer in #5.

d) Where is the **minimum** of the curve $y = x^2 - 4x$ ?

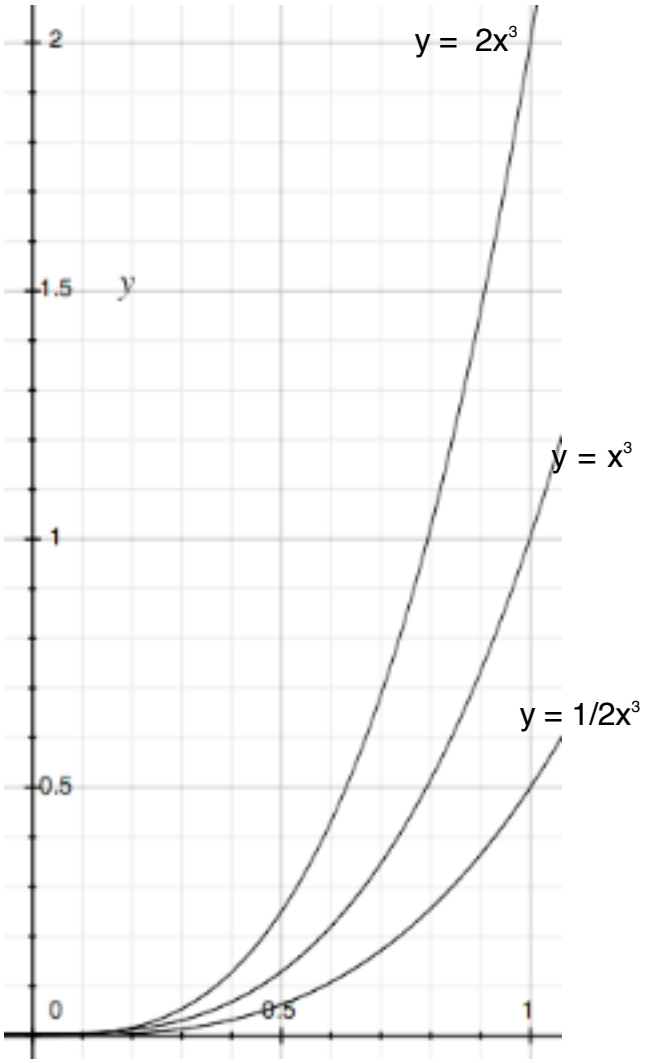
e) Relate this answer to your answers in #5.

8. a) Find the area under the curve $y = x^3$ from 0 to 1.

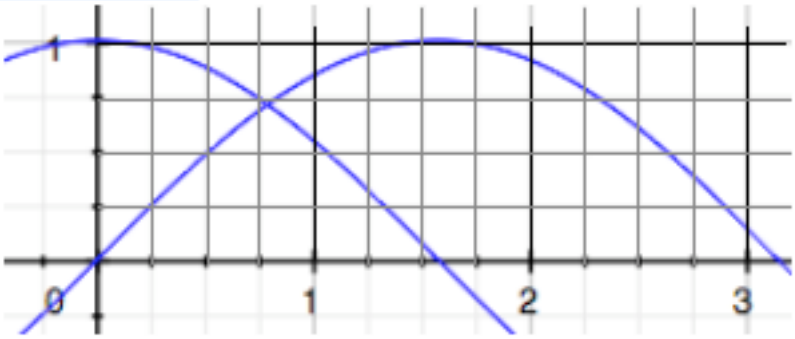
b) Find the area under the curve $y = 2x^3$ from 0 to 1.

c) Find the area under the curve $y = 1/2x^3$ from 0 to 1.

d) What does a coefficient do to the area under a given curve? Explain why this makes sense geometrically.



5. a) Find the area under the curve $y = \sin x$ from 0 to $\pi$.




What is going on here?

b) Find the area under the curve $y = \cos x$ from 0 to $\pi/2$.

c) Explain the relationship between (a) and (b).

d) Find the area under the curve $y = \sin x$ from 0 to $2\pi$. How could this answer make sense?