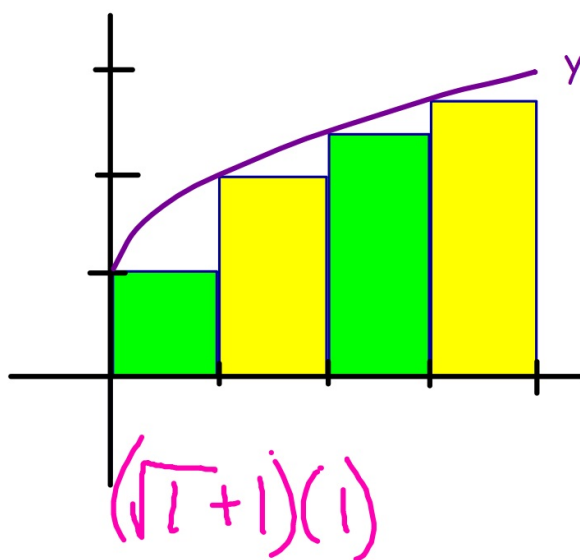


September 5

SWBAT:

Predict if a Riemann sum  
will give you an over- or  
under-estimate.



$$\sum_{x=0}^3 (\sqrt{x} + 1)(1)$$

$$\sum_{x=1}^4 (\sqrt{x} + 1)(1)$$

Riemann  
Sum

(RAM)

$$\sum_{k=1}^n \underbrace{f(x_k)}_{\text{height}} \underbrace{\Delta x}_{\text{width}}$$

Area

# of rectangles

- a. Consider the function  $F(x) = \frac{x^3}{3} + 2x$ . Compute  $F(6) - F(1)$ . How does this value compare to the exact answer in questions 1, 2, and 3? What is the relationship between  $F$  and  $f$ ?

$$F(6) = 84$$
$$F(1) = \frac{7}{3}$$

$$F(6) - F(1) = 81.667$$

$$F(x) = \frac{x^3}{3} + 2x$$

$$f(x) = x^2 + 2$$

$$\rightarrow F'(x) = \frac{3x^2}{3} + 2 = x^2 + 2$$