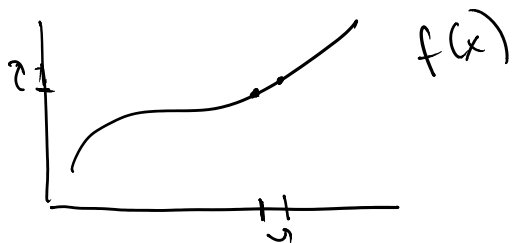


Overview

Calculus mainly the study of functions

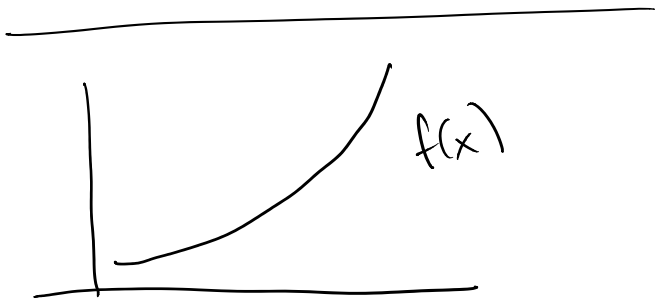
- rates of change (derivatives)
- areas under graphs (integral)



rate of change described by

how much change in y per change in x .

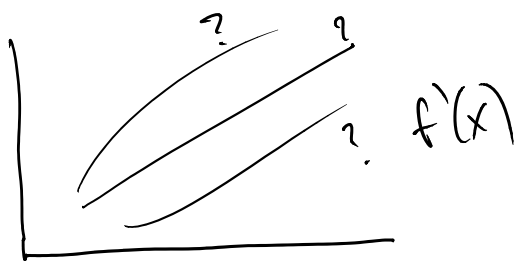
$$\frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}} = \text{slope.}$$



In practice:

get lots of eqns involy rates of change -

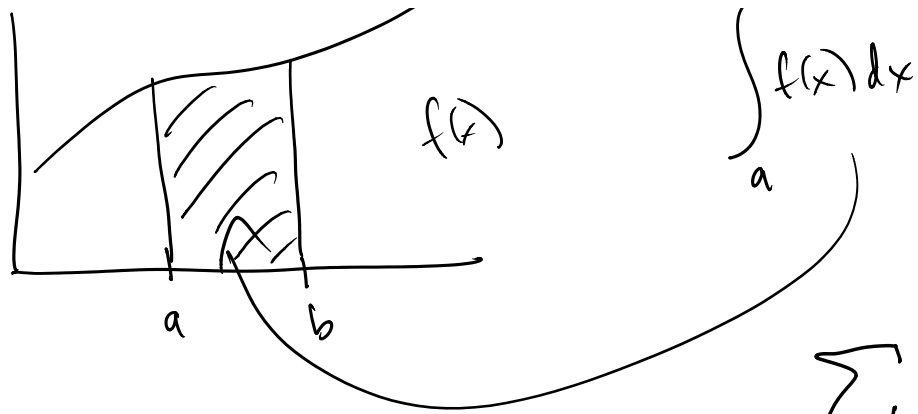
"Differential Equations"



Areas under curves

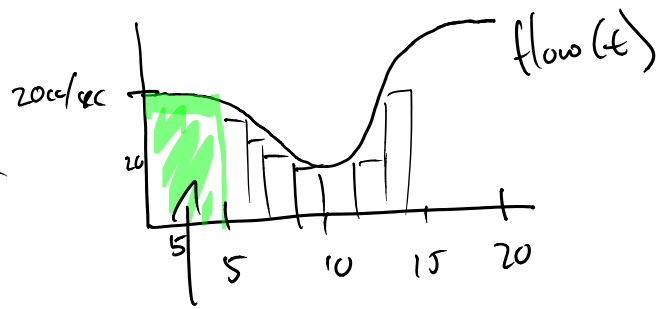


$$\int_a^b f(x) dx$$



Σ = "s" for summation

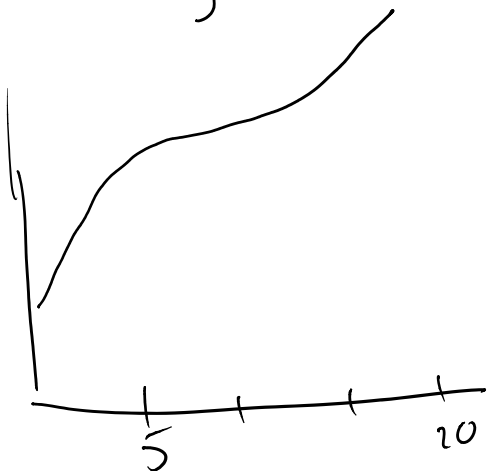
Fundamental theorem of calculus



$$100 \text{ cc} = 20 \cdot 5$$

$$\int_0^{20} \text{flow}(t) dt = \text{water}(20)$$

$$\int \text{flow} = \text{water}$$



water(t)

$$\text{water}'(t) = \text{flow}(t)$$

$$\left(\int \text{flow} \right)' = \text{flow}$$

$$\int (\text{water}') = \text{water}$$