

$$\int_a^b f(t) dt \equiv \lim_{\|\Delta x\| \rightarrow 0} \sum_{i=0}^{n-1} f(c_i)(x_{i+1} - x_i)$$

width of the rectangles gets really small \uparrow $\|\Delta x\|$
 adding all \uparrow \sum
 height of this rectangle \downarrow $f(c_i)$
 width of this rectangle \downarrow $x_{i+1} - x_i$
 area of this rectangle \uparrow $f(c_i)(x_{i+1} - x_i)$