

# Lecture 20

Thursday, May 30, 2024 1:39 PM

Review for midterm exam (see worksheets).

\* Integral of multivariable functions

$$\text{Calc I: } \int_a^b f(x) dx = \int_{[a,b]} f(x) dx$$



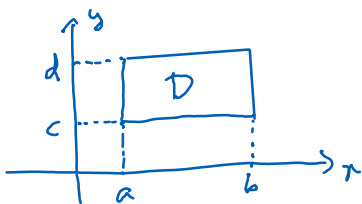
Multivariable:

$$\iint_D f(x,y) dA$$

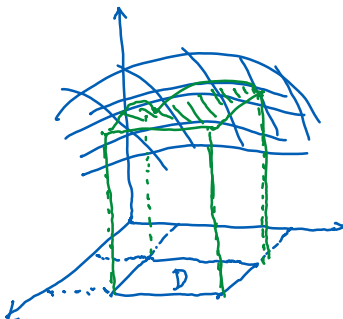
region in  $\mathbb{R}^2$       small area

Consider the simple case:

$$D = [a,b] \times [c,d] = \{(x,y) \mid a \leq x \leq b, c \leq y \leq d\}$$



$D$  is a rectangle in standard position



$$\iint_D f(x,y) dA = \text{vol of the solid under the graph of } f \text{ and above the region } D.$$