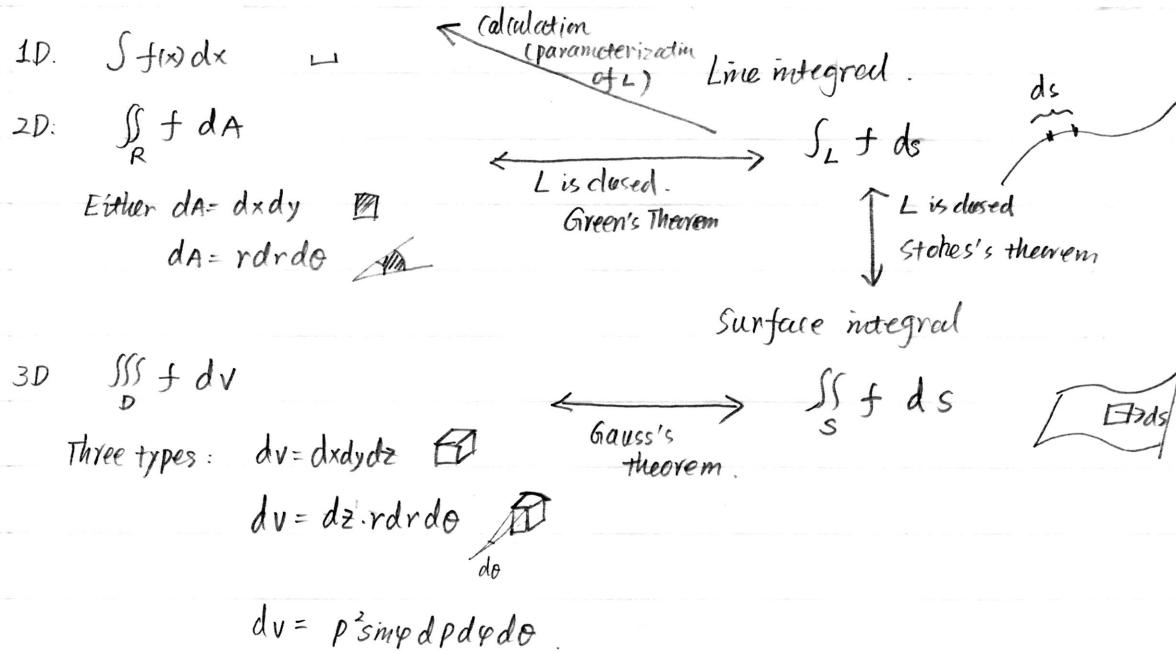


Nov. 9

Chapter 15 overview



Review: Parameterization of commonly seen curves.

① Line segment from (a, b) to (c, d)

$$\vec{r}(t) = \langle a, b \rangle + t \cdot \langle c-a, d-b \rangle \quad 0 \leq t \leq 1$$

② Circle with center (a, b) and radius r , counterclockwise

$$\vec{r}(t) = \langle a + r \cos t, b + r \sin t \rangle \quad 0 \leq t \leq 2\pi$$

③ Ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ counterclockwise

$$\vec{r}(t) = \langle a \cos t, b \sin t \rangle \quad 0 \leq t \leq 2\pi$$

④ Arbitrary curve $y = f(x) \quad 0 \leq x \leq a$

$$\vec{r}(t) = \langle t, f(t) \rangle \quad 0 \leq t \leq a$$

Def: Vector field

$$F(x, y, z) = \langle f(x, y, z), g(x, y, z), h(x, y, z) \rangle$$

A vector field F is a function that assigns each point (x, y, z) a vector $\langle f, g, h \rangle$.