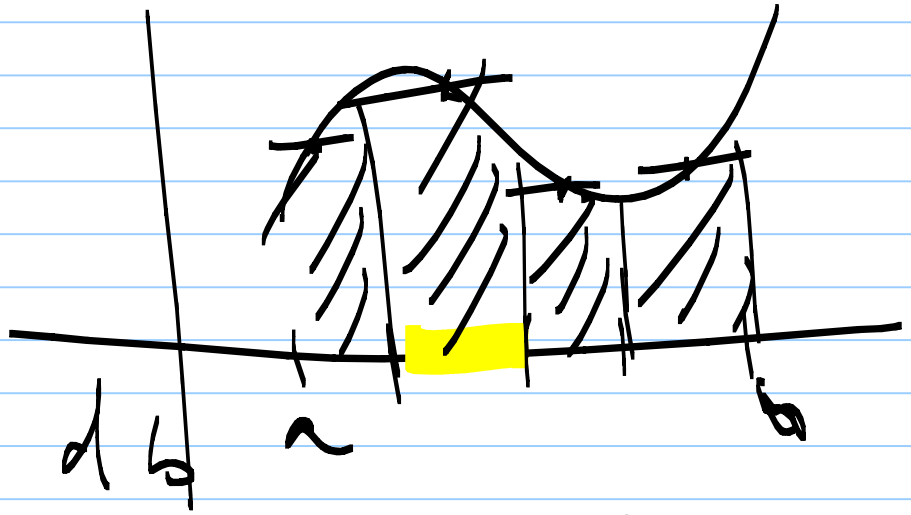
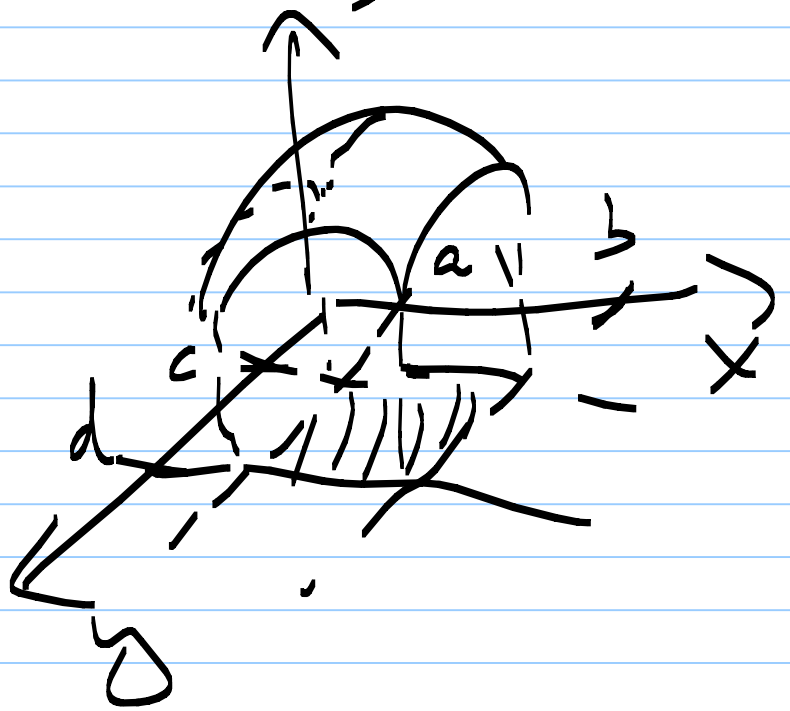
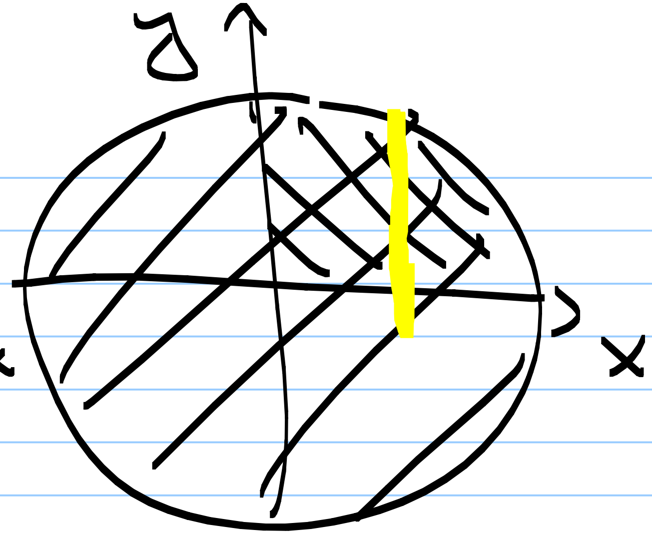
$$\int_a^b f(x)\,dx = F(b) - F(a), \qquad F'(x) = f(x)$$





$$\int_c^d \int_a^b f(x,y)\,dx\,dy$$

plnh $\{x^2+y^2 \le 1\} = M$



$$S = \int_M 1\,dx\,dy = 4\int_0^1 \int_0^{\sqrt{1-x^2}} 1 \,dy\,dx$$

$$= 4\int_0^1 \sqrt{1-x^2}\,dx = \pi$$

$$\Phi \begin{cases} x = r\cos\theta \\ y = r\sin\theta \end{cases} \qquad D^1\Phi: \begin{pmatrix} \cos\theta & -r\sin\theta \\ \sin\theta & r\cos\theta \end{pmatrix}, \quad |D^1\Phi| = r(\cos^2\theta+\sin^2\theta) = r$$

$$M = \{r \le 1\} \qquad S = \int_0^{2\pi}\int_0^1 1\cdot r\,d\theta\,dr = 2\pi\int_0^1 r\,dr = \pi$$

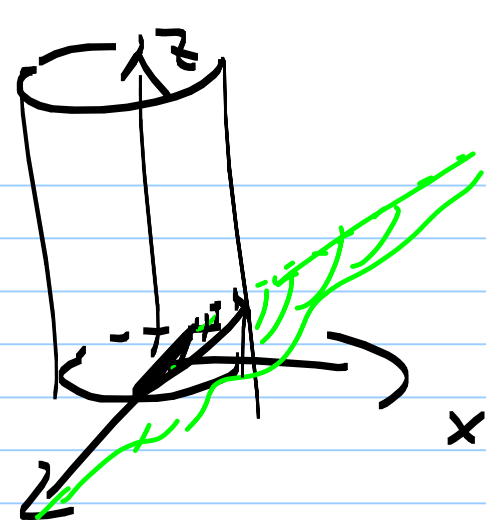
✓

8.6 a)

valec $x^2+y^2 \le 1$ u $\mathbb{R}^3$

polupraton $z \le x$

-"- $z \ge 0$



$x = r\cos\theta$

$y = r\sin\theta$

$z = z$

$M = \{ r \le 1,\ z \ge 0,\ z \le r\cos\theta \}$

$D\Phi = \begin{pmatrix} & \ddots & & 0 \\ & & & 0 \\ 0 & 0 & & 1 \end{pmatrix}$

$$V = \int_0^1 \int_{-\pi/2}^{\pi/2} \int_0^{r\cos\theta} r\,dz\,d\theta\,dr = \int_0^1 \int_{-\pi/2}^{\pi/2} r^2\cos\theta\,d\theta\,dr = 2\int_0^1 r^2\,dr = \frac{2}{3}$$