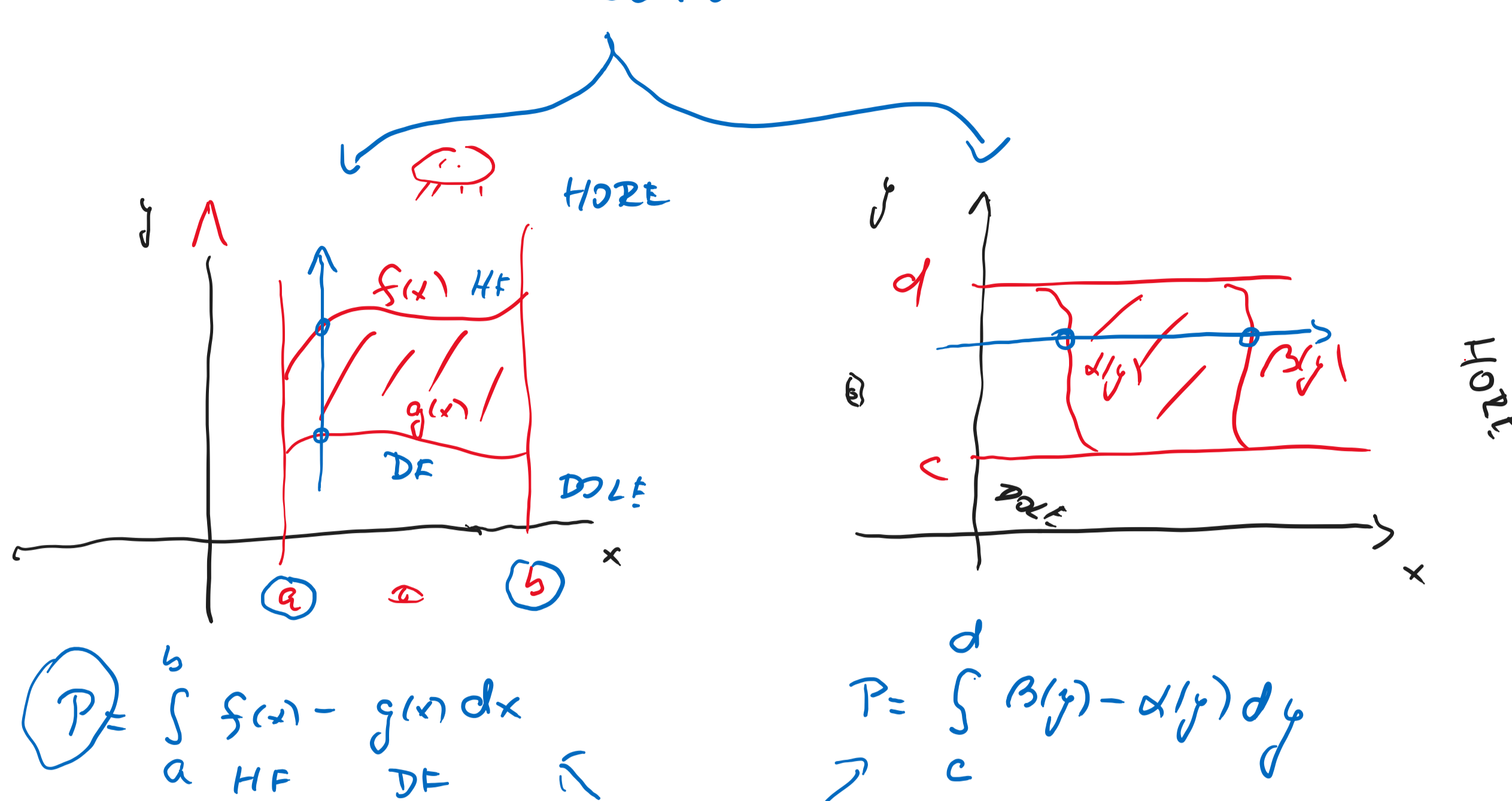


U. I. - Objem rotačného telesa

Plocha



Pr.

$P = ?$

NÁČRTOK

1. TVAR
2. VRCHOL

HRANICE PRE IUT.

Prisečníky oblouk por.  $4 - x^2 = x^2 - 4x - 2$

$0 = x^2 - 2x - 3 = (x+1)(x-3)$   
 $x = -1 \quad x = 3$

$y = 4 - x^2$   
 $y = x^2 - 4x - 2$

Derivatives:  
 $y' = 2x - 4 = 0 \Rightarrow x = 2$   
 $y = 4 - 8 - 2 = -6$   
 $y = 4 - x^2 \Rightarrow y' = -2x = 0 \Rightarrow x = 0$

Area calculation:  
 $P = \int_{-1}^3 (4 - x^2) - (x^2 - 4x - 2) dx = \int_{-1}^3 (-2x^2 + 4x + 6) dx = \dots$

Pr.

$P = ?$

NÁČRT

Curves:  $y = \frac{16}{x}$ ,  $y = x$ ,  $y = 0$ ,  $x = 8$

DF  $y = 0$

HF  $y = x$ ,  $y = \frac{16}{x}$  (2 fce)

MUSIA OBLAST DELIT

Prisečník - deliaci bod

$x = \frac{16}{x} \Rightarrow 16 = x^2 \Rightarrow x = 4$

Area calculation:  
 $P = P_1 + P_2 = \int_0^4 x dx + \int_4^8 \frac{16}{x} dx = \frac{x^2}{2} \Big|_0^4 + 16 \ln x \Big|_4^8 = \dots$

OBJEM ROTAČNÉHO TELESA

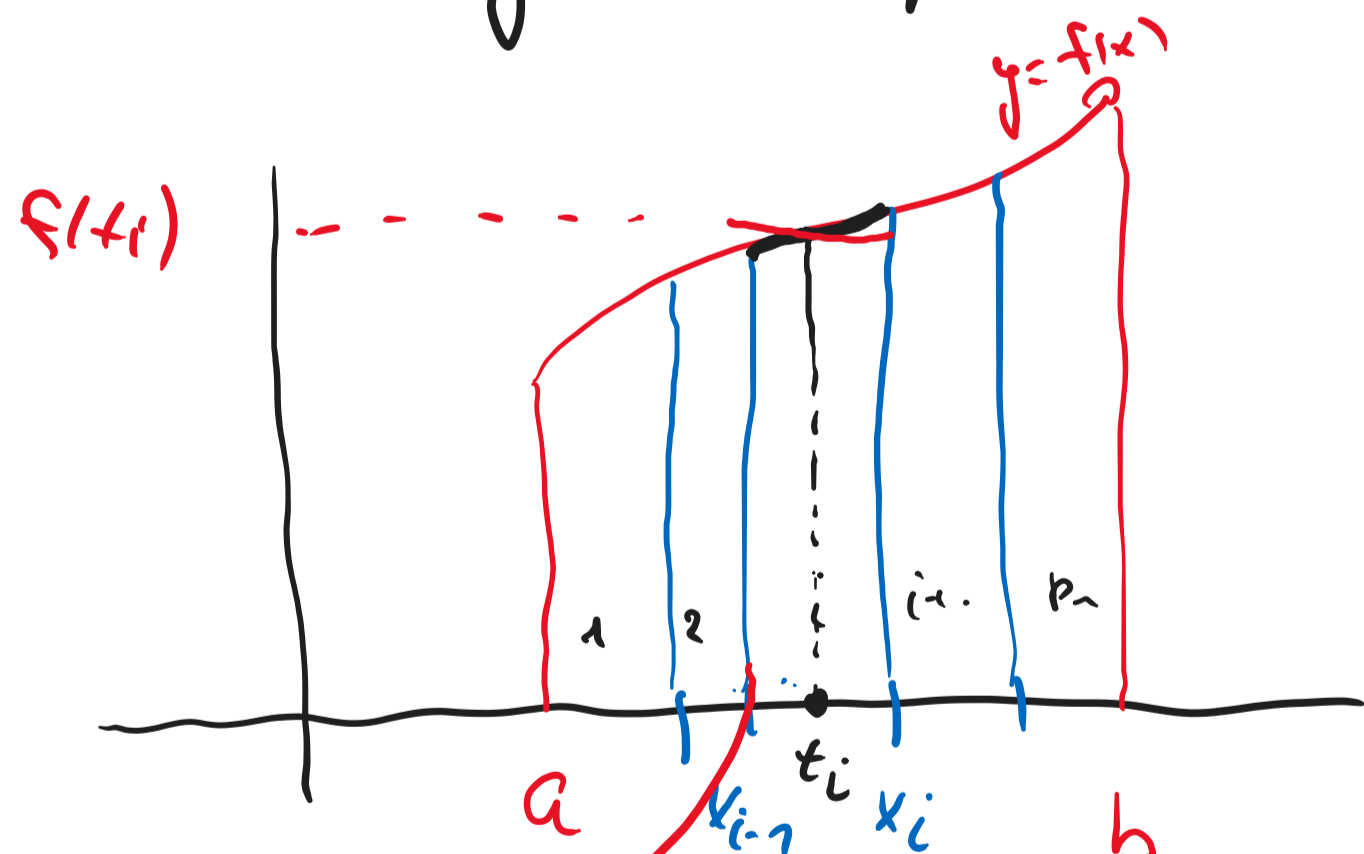
VIERE

$\int_a^b f(x) dx = \lim_{n \rightarrow \infty} \sum_{i=1}^n f(t_i) \Delta x_i$

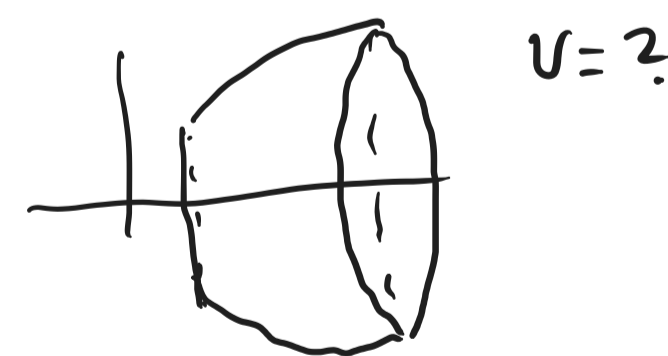
Delenie  $\langle 0, \pi/2 \rangle$   $\left( \lim_{n \rightarrow \infty} \sum_{i=1}^n \sin(t_i) \Delta x_i = \int_0^{\pi/2} \sin x dx \right)$

každému tabuľkovo  $\rightarrow$  učit' integr.

NÁZEV  $y = f(x)$  sp. na  $\langle a, b \rangle$



Medzi ostat' graf obrob' xix  
 ? Najst' objem vzniknute'ho telesa?



Delenie  $\langle a, b \rangle$

$V = \sum_{i=1}^n V_i$   $V_i$  - objem rotaciu i k'og

$V_i \approx$  objem valca

$\pi r^2 \Delta x$

$\pi f^2(t_i) \Delta x_i$

$V \approx \sum_{i=1}^n \pi f^2(t_i) \Delta x_i$

$V \approx \lim_{n \rightarrow \infty} \sum_{i=1}^n \pi f^2(t_i) \Delta x_i = \int_a^b \pi f^2(x) dx$

**NAKONIEC**  $V = \pi \int_a^b f^2(x) dx$