

1. cvičení

1. HRW 1 , kapitola 1, 18Ú

$$\text{dáno } V \dots V = S_{Po} \cdot v = \pi \frac{d^2}{4} v \Rightarrow v = \frac{4V}{\pi d^2} \Rightarrow v = f(d)$$

$$S = 2S_{Po} + S_{Pl} = 2\pi \frac{d^2}{4} v + \pi d v = \frac{1}{2} \pi d^2 + \pi d v = \frac{1}{2} \pi d^2 + \pi d \frac{4V}{\pi d^2} = \frac{1}{2} \pi d^2 + \frac{4V}{d}$$

$$\frac{dS(d)}{dd} = \pi d - \frac{4V}{d^2}$$

$$\text{extrém} \dots \frac{dS(d)}{dd} = 0$$

$$\pi d - \frac{4V}{d^2} = 0$$

$$\pi d - \frac{4}{d^2} \left(\pi \frac{d^2}{4} v \right) = 0$$

$$\pi d - \pi v = 0$$

$$d = v \Rightarrow \text{extrém v } d = v$$

$$\frac{d^2 S(d)}{dd^2} = \pi + \frac{8V}{d^3}$$

$$d > 0 \wedge V > 0 \Rightarrow \pi + \frac{8V}{d^3} > 0 \Rightarrow \text{v } d = v \text{ je minimum c.b.d.}$$

2. HRW, kapitola 1, 20C

$x = 45$ minut

$y = \text{„mikrostoletí“} = 60 \cdot 24 \cdot 356,25 \cdot 100 \cdot 10^{-6} = 52,596$ minut

procentuální odchylka:

$$o = \frac{y - x}{x} \cdot 100\% = \frac{52,596 - 45}{45} \cdot 100\% = 16,88\%$$