



$$\text{ma } A = 1 \quad \& \quad B = A = 1 \quad (2)$$

$$\text{ma } y_p = \ln x + 1$$

$$\text{ma } y = (C_1 + C_2 \ln x) x + \ln x + 1 \quad (1)$$

20

### MATEMATIKA 2 (FMT) - 3. KOLOKVIJ,

$$(1) \quad \frac{d}{dt} \left( \frac{4}{3} \pi r^3 \right) = -\alpha (4\pi r^2)$$

$$\Rightarrow r^2 \dot{r} = -\alpha r^2 \quad (2)$$

$$\Rightarrow \dot{r} = -\alpha \quad (5)$$

$$\Rightarrow r = r_0 - \alpha(t - t_0); \quad 2\text{cm} = 4\text{cm} - \alpha \cdot 1\text{h}$$

$$\alpha = +2\text{cm/h} \quad (3)$$

$$1\text{cm} = 2\text{cm} - \alpha \Delta t$$

$$\Delta t = 1\text{cm}/\alpha = \underline{0.5\text{h}} \quad (4)$$

20

$$(1) \quad N = N_0 e^{-\lambda t} \Rightarrow -\frac{dN}{dt} = +\lambda N \quad (10)$$

$$\frac{N_0}{2} = N_0 e^{-\lambda t_{1/2}}$$

$$\ln 2 = \lambda t_{1/2}$$

"Srećepu" mg  
masa m / ogljika / vreme t No ogljika  
C-14 u vreme torg

$$6.68/\text{min} = -\frac{dN}{dt}(t) = +\lambda N_0 \quad (4)$$

Visti mesi ogljika bo po prethod tase t (stanost dika)

$N_0 e^{-\lambda t}$  abnovo ogljika (-14)

Zato bo u vreme

$$1/\text{min} = \frac{dN}{dt}(t) = +\lambda N_0 e^{-\lambda t} \quad (4)$$

$$\Rightarrow 6.68 = e^{\lambda t} \Rightarrow t = \frac{\ln 6.68}{\ln 2} t_{1/2} = \underline{15.700 \text{ let}} \quad (2)$$

20