DN
54.

REŠI

$$y' = \frac{2y+1}{x^2+x}$$

(ENAČBA Z LOČLJIVIMI SPREMENLJIVKAMI)

$$\frac{dy}{dx} = \frac{2y+1}{x^2+x} \quad | : (2y+1), \; y \neq -\frac{1}{2}$$

$$\frac{dy}{2y+1} = \frac{dx}{x^2+x}$$

$$\frac{1}{2}\int \frac{dy}{y+\frac{1}{2}} = \int \frac{dx}{x(x+1)}$$

$$\frac{1}{2}\int \frac{dy}{y+\frac{1}{2}} = \int \frac{dx}{x} - \int \frac{dx}{x+1}$$

$$\frac{1}{2}\ln\left|y+\frac{1}{2}\right| = \ln|x| - \ln|x+1| + \ln C$$

$$\ln\left|y+\frac{1}{2}\right| = 2\ln\frac{C|x|}{|x+1|}$$

$$\left|y+\frac{1}{2}\right| = \frac{Dx^2}{(x+1)^2} \qquad D = C^2 > 0$$

$$y+\frac{1}{2} = \frac{Ex^2}{(x+1)^2} \qquad E \in \mathbb{R}\setminus\{0\}$$

$$y = \frac{Ex^2}{(x+1)^2} - \frac{1}{2}$$

$$\frac{1}{x(x+1)} = \frac{A}{x} + \frac{B}{x+1}$$

$$= \frac{Ax+A+Bx}{x(x+1)}$$

$$= \frac{(A+B)x+A}{x(x+1)}$$

$\Rightarrow A = 1$

$A+B=0 \Rightarrow B = -A = -1$

ALI JE TUDI $y = -\frac{1}{2}$ REŠITEV DE.?

$y = -\frac{1}{2} \Rightarrow y' = 0$

$\frac{2y+1}{x^2+x} = 0$

$y = -\frac{1}{2}$ JE TUDI REŠITEV

$$y = \frac{Fx^2}{(x+1)^2} - \frac{1}{2}, \; F \in \mathbb{R}$$