

$$x^2 y' = 2xy - 3$$

$$y(-1) = 1$$

LINEARNA DE.

$$y' - 2\frac{y}{x} = -\frac{3}{x^2}$$

$$y_H: y' - 2\frac{y}{x} = 0$$

$$y' = 2\frac{y}{x}$$

$$\frac{dy}{y} = \frac{2dx}{x}$$

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

$$\ln|y| = 2 \ln|x| + \ln C \quad C > 0$$

$$|y| = C|x^2|$$

$$y = Dx^2 \quad D \neq 0$$

$$y = 0 \text{ JE TUDI REŠITEV / + DE } \quad y_H = Ex^2, E \in \mathbb{R}$$

$$y_P: y_P = E(x)x^2 \quad (\text{VARIACIJA KONSTANTE})$$

$$y_P' = E'(x)x^2 + E(x) \cdot 2x$$

$$\text{VSTAVIMO V DE: } y' - 2\frac{y}{x} = -\frac{3}{x^2}$$

$$E'(x)x^2 + 2xE(x) - 2E(x) \cdot x = -\frac{3}{x^2}$$

$$E'(x) = -3x^{-4} \Rightarrow E(x) = x^{-3} \rightarrow$$

$$\Rightarrow y_P = \frac{x^2}{x^3} = \frac{1}{x} \Rightarrow$$

$$\Rightarrow \underline{y_3 = y_H + y_P = Ex^2 + \frac{1}{x}, E \in \mathbb{R}}$$

$$\text{VPOŠEVNIMO ZAČETNI POGOJ: } y(-1) = E(-1)^2 + \frac{1}{(-1)} = E - 1 = 1 \rightarrow$$

$$\Rightarrow E = 2$$

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