

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

$$y_1 \equiv -1, \quad x \neq 0$$

$$\frac{dy}{dx} = \frac{(y+1)^2}{xy+x-x^2}$$

$$\frac{dx}{dy} = \frac{x(y+1)-x^2}{(y+1)^2} = \frac{x}{y+1} - \left(\frac{x}{y+1}\right)^2$$

$$z = \frac{x}{y+1}$$

$$\frac{dz}{dy} = \frac{\frac{dx}{dy}(y+1)-x}{(y+1)^2} \Rightarrow (y+1)\frac{dz}{dy} + z = \frac{dx}{dy}$$

$$(y+1)\frac{dz}{dy} + z = z - z^2$$

$$-\frac{dz}{z^2} = \frac{dy}{y+1}$$

$$\frac{1}{z} = \ln|y+1| + C$$

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

בדיקה:

$$\phi = \frac{y+1}{x} - \ln|y+1| = C$$

$$\phi_x = -\frac{y+1}{x^2}, \quad \phi_y = \frac{1}{x} - \frac{1}{y+1}$$

$$\phi_x dx + \phi_y dy = 0$$

$$-\frac{y+1}{x^2} dx + \left(\frac{1}{x} - \frac{1}{y+1}\right) dy = 0$$

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

$$\frac{dy}{dx} = \frac{y+1}{x^2} \cdot \frac{x(y+1)}{y+1-x} = \frac{(y+1)^2}{xy+x-x^2}$$