

ZADANIE 7.

$$\frac{dx}{dt} = y - 1$$

$$\frac{dy}{dt} = e^{x+y}$$

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

$$\frac{dy}{dx} = \frac{e^x e^y}{y-1} \quad | \cdot dx$$

$$dy = \frac{e^x e^y}{y-1} dx \cdot \frac{y-1}{e^y}$$

$$\frac{y-1}{e^y} dy = e^x dx \quad | \int$$

$$\int \frac{y-1}{e^y} dy = \int e^x dx$$

$$\frac{y}{e^y} = C - e^x$$

$$y e^{-y} = C - e^x$$

$$\underline{\underline{y e^{-y} + e^x = C}}$$

ZADANIE 9

$$\frac{dx}{dt} = 2y - x$$

$$\frac{dy}{dt} = e^x + y$$

$$\frac{dy}{dx} = \frac{e^x + y}{2y - x} \quad | \cdot dx$$

$$dy = \frac{e^x + y}{2y - x} dx \quad | \cdot (2y - x)$$

$$(2y - x)dy = (e^x + y)dx$$

$$(2y - x)dy + (-y - e^x)dx = 0$$

$$M(x, y)dy + N(x, y)dx = 0$$

$$M(x, y) = 2y - x, \quad N(x, y) = -y - e^x$$

$$M_x = -1 = N_y$$

$$F(x, y) = \int N(x, y)dx = \int (-y - e^x)dx = -e^x - yx + C_y$$

$$C_y = \int M(x, y) - (-e^x - yx) \frac{dy}{dx} = \int (2y - x + x)dy =$$

\Downarrow
-x

$$= \int 2y dy = y^2 + C$$

$$F(x, y) = \underline{-e^x - yx + y^2 + C}$$

$$\Downarrow$$

$$e^x + yx - y^2 = C$$