

1. Solve the following system of DE by method of elimination:

a)
$$\begin{cases} \frac{dx}{dt} = x + 2y \\ \frac{dy}{dt} = 2x - 2y \end{cases} ; x(0) = 1; y(0) = 2$$

b)
$$\begin{cases} \frac{dx_1}{dt} = 4x_1 + 2x_2 \\ \frac{dx_2}{dt} = -x_1 + x_1 \end{cases} ;$$

c)
$$\begin{cases} \frac{dx_1}{dt} = -2x_1 + x_2 + t \\ \frac{dy}{dt} = -2x_1 + x_2 + 1 \end{cases}$$

d)
$$\begin{cases} \frac{dx_1}{dt} = x_1 + x_2 + e^{2t} \\ \frac{dx_2}{dt} = 3x_1 - x_2 + 5e^{2t} \end{cases} ; \quad x(0) = 1; \quad y(0) = 2$$