

MTH 376

Homework 10

Luis David Garcia-Puente

Section 5.2

6. Hint. Solve for y and then use the second differential equation to find x .

$$x(t) = \frac{c_1 + c_2}{2}e^t \cos 2t + \frac{c_2 - c_1}{2}e^t \sin 2t + \frac{7}{10} \cos t - \frac{1}{10} \sin t,$$
$$y(t) = c_1 e^t \cos 2t + c_2 e^t \sin 2t + \frac{11}{10} \cos t + \frac{7}{10} \sin t$$

10. Hint. Solve for x and then subtract both differential equations to write y in terms of x and x' .

$$x(t) = c_1 \cos t + c_2 \sin t, \quad y(t) = \frac{c_2 - 3c_1}{2} \cos t - \frac{c_1 + 3c_2}{2} \sin t + \frac{1}{2}e^t - \frac{1}{2}e^{-t}$$

18.

$$x(t) = -t^2 - 4t - 3 + c_3 + c_4 e^t - c_1 t e^t - \frac{1}{2}c_2 e^{-t},$$
$$y(t) = -t^2 - 2t - c_1 e^t + c_2 e^{-t} + c_3$$