Math 333
Quiz 4
Thursday, February 14, 2008

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1. Find all equilibrium points of the system

$$\begin{aligned} \frac{dx}{dt} &= x - y + x^2 - xy \\ \frac{dy}{dt} &= = y + x^2. \end{aligned}$$

2. Convert the second-order differential equation

$$\frac{d^2y}{dt^2} + 7\frac{dy}{dt} + 10y = 0$$

into a system of first-order differential equations, where

$$\frac{dy}{dt} = v.$$

3. **Bonus (5 points).** Find the general solution of the system

$$\begin{aligned} \frac{dx}{dt} &= 2x + 3y \\ \frac{dy}{dt} &= -4y. \end{aligned}$$