Differential Equations Seminar: Week 4 Exercises

For each of the following systems, find and classify all equilibrium points:

1. $x' = 4 - 4x^2 - y^2$
    $y' = 3xy$

2. $x' = y^2 - 3x + 2$
    $y' = x^2 - y^2$

3. $xx'' + \dfrac{3}{2}(x')^2 = 1 - \dfrac{1}{x}$ (Hint: First rewrite this equation as a system.)