Almost Linear Systems (7.1 & 7.2)

For problems **1**–**2**,

- **a.** Find all critical points.
- **b.** For each critical point, find the corresponding linear system.
- **c.** Find eigenvalues of each linear system, and determine the stability/instability of each critical point.
- **d.** Draw a phase portrait for the nonlinear system.

1. $dx/dt = x - y^2, \quad dy/dt = x - 2y + x^2$

2. $dx/dt = 3 - xy, \quad dy/dt = x - 3y^3$