

Math 3280 Worksheet 46: Hopf bifurcations

Group members (1 to 4): _____

(1) Convert the system

$$x' = ax + y - x^3 - xy^2$$

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

to polar coordinates.

(2) Solve the polar differential equations and sketch the solutions for $a = -1$, $a = 0$, and $a = 1$.