Lotka-Volterra Model

The first predator-prey model we considered was the Volterra model, here presented in dimensionless form:

$$\dot{N}_1 = N_1(1 - N_2),$$
$$\dot{N}_2 = \alpha N_2(N_1 - 1).$$

We discovered that trajectories were level sets of

$$\alpha(N_1 - \log N_1) + N_2 - \log N_2.$$

A phase plane for this model is graphed below.

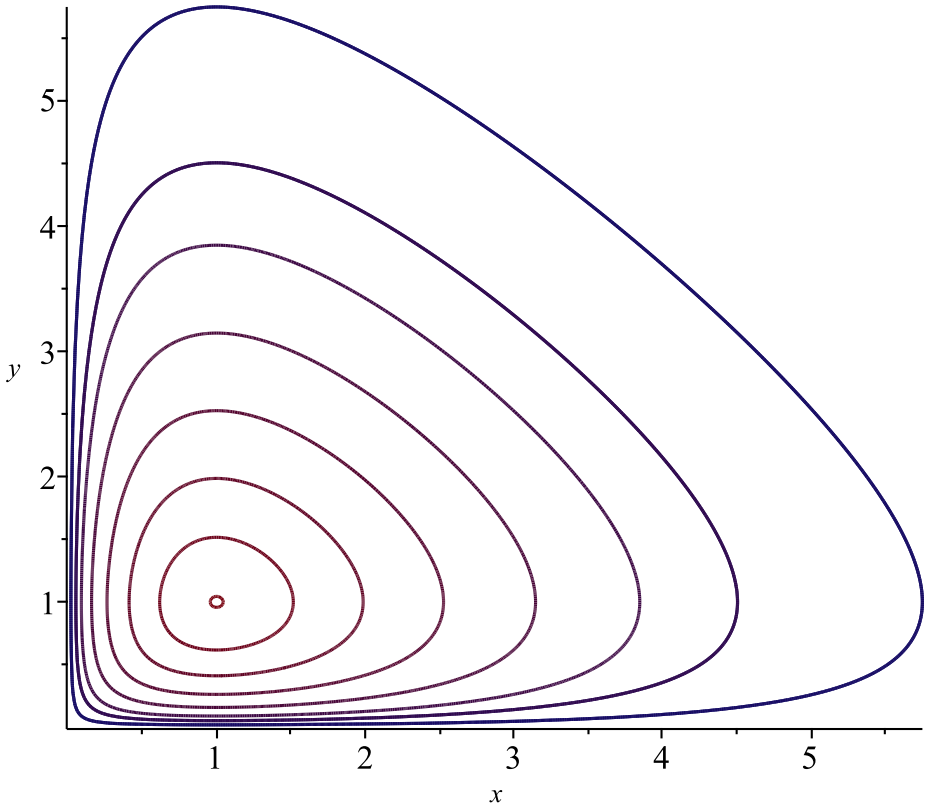

Figure 1. Phase plane for Lotka-Volterra model, $\alpha = 1$.