Mathematics 172

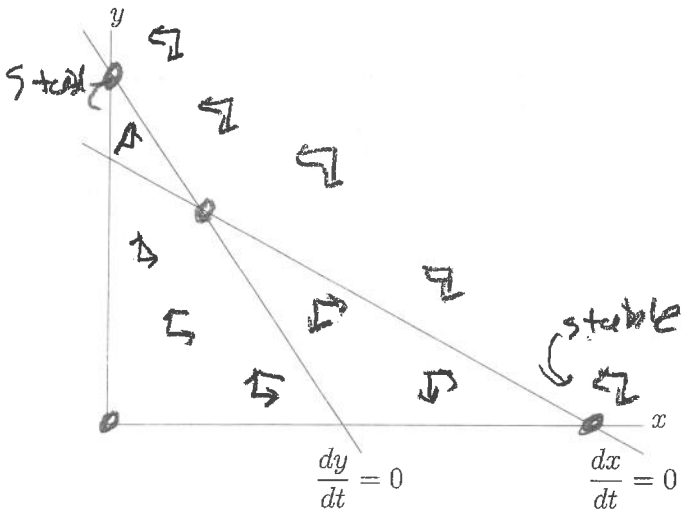
Quiz 24 Name: Key

You must show your work to get full credit.

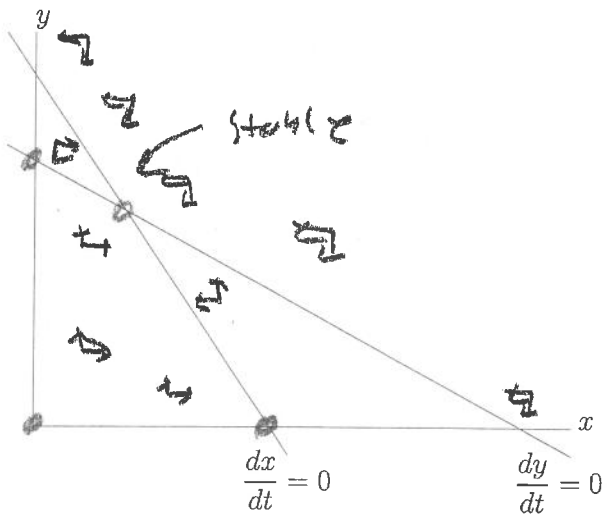
The following are phase diagrams for the equations

$$\frac{dx}{dt} = r_1 x\left(\frac{K_1 - x - \alpha y}{K_1}\right)$$
$$\frac{dy}{dt} = r_2 y\left(\frac{K_2 - \beta x - y}{K_2}\right)$$

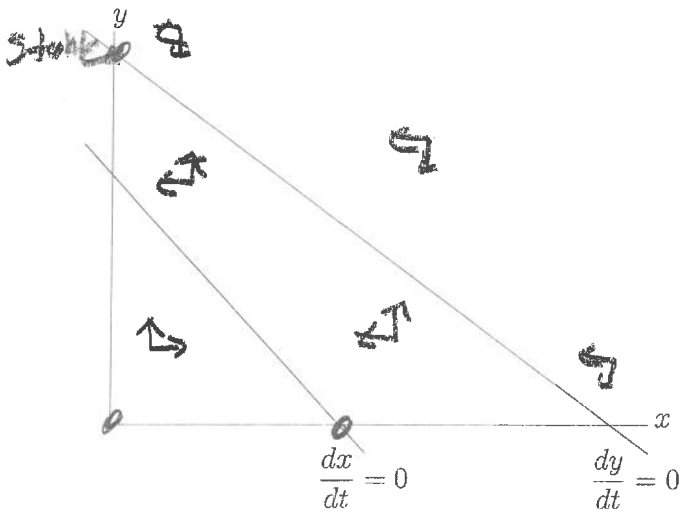
of competing species. In each of the figure label the rest points (or equilibrium points) with a large filled in circle ● and label which are stable. Also put in some arrows in each region showing which way the points (x, y) are moving. Also label as the long term behavior, this is if it is ***competitive coexistence*** or ***competitive exclusion***, ***x-species dominates***, or ***y-species dominates***.



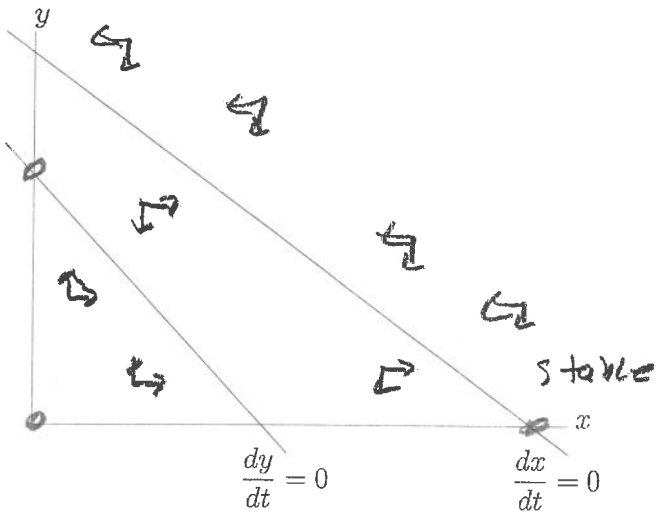
Long term behavior is:
competitive exclusion



Long term behavior is:
competitive coexistence



Long term behavior is:
y-species dominates



Long term behavior is:
x-species dominates