Mathematics 172

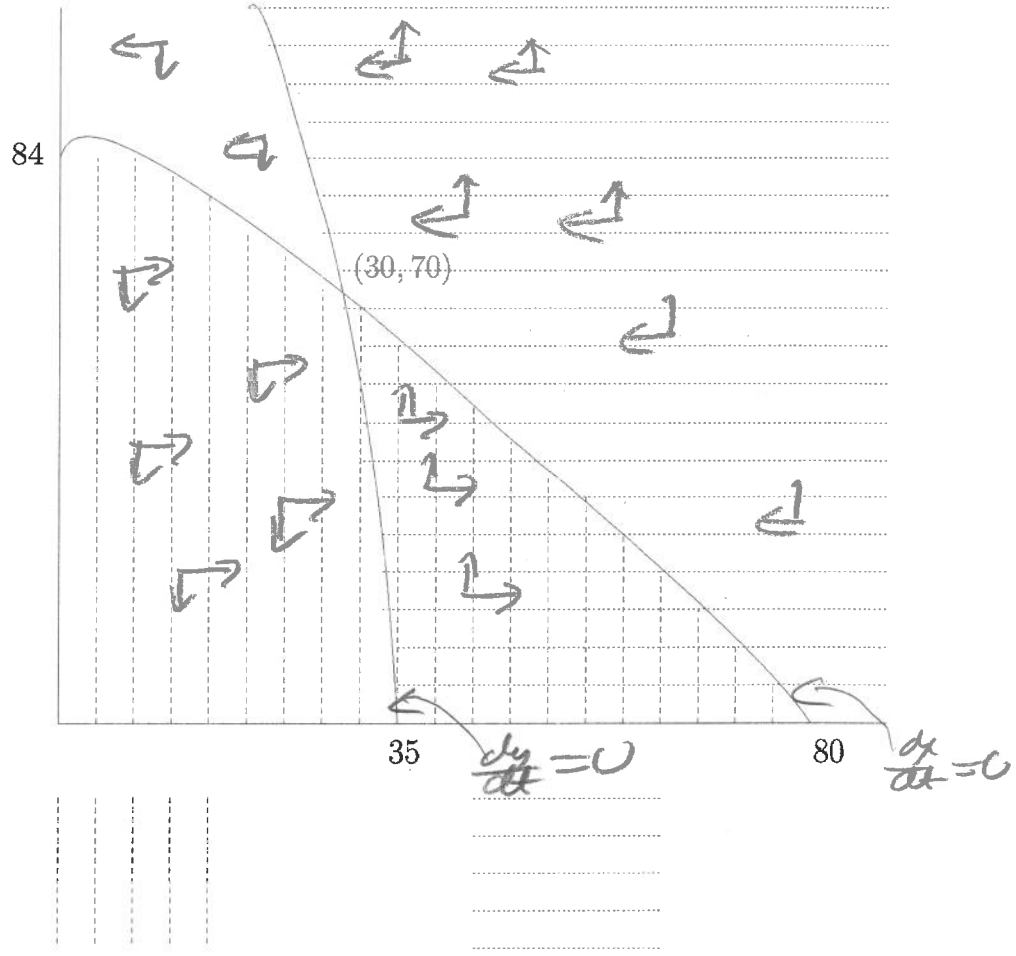
Quiz 24 **Name:** Key

You must show your work to get full credit.

Consider a system of rate equations relating the sizes of the populations of two species, the x-species and the y-species:

$$\frac{dx}{dt} = xf(x,y)$$
$$\frac{dy}{dt} = yg(x,y)$$

and assume the phase diagram looks like:



$f(x,y) > 0$ shaded like this $g(x,y) > 0$ shaded like this

1. Label the curved line where $\frac{dx}{dt} = 0$
2. Label the curved line where $\frac{dy}{dt} = 0$
3. What are the equilibrium points? The points are (0,0), (80,0), (30,70)
4. Put in arrows which show which way a point is moving in each of the regions.