

Quiz #25

Name: Key

*You must show your work to get full credit.*

Consider a predator-prey system governed by the equations

$$\frac{dV}{dt} = .1V - .002VP = V(.1 - .002P)$$

$$\frac{dP}{dt} = -.2P + .0001VP = P(-.2 + .0001V)$$

1. What is the intrinsic growth rate of the victim population?

Intrinsic growth rate is .1

2. What is the intrinsic death rate of the predator population?

Intrinsic death rate is .2

3. What is the average number of victims and predators.

Solve  $-.2 + .0001V = 0$   
 to get  $\hat{V} = \frac{.2}{.0001} = 2000$   $\hat{V} =$  2000

Solve  $.1 - .002P = 0$   $\hat{P} =$  50  
 to get  $\hat{P} = \frac{.1}{.002} = 50$

4. Draw the phase space.

