Which of the following is true in a Lotka-Volterra predator prey model:

A. The prey birth rate is constant.
B. The predator birth rate depends on the # of prey.
C. The prey death rate depends on the # of predators.
D. The predator death rate depends on the # of prey.

What is the name of points where neither species changes quantity?

A. Poincare Points
B. Equilibrium Points
C. Null Points
D. Cooperative Points

Species r and s are represented in a phase plane with r on the horizontal axis and s on the vertical axis. In a portion of the phase plane, $\Delta r > 0$ and $\Delta s < 0$. In that portion of the phase plane

A. r increases and s increases.
B. r increases and s decreases.
C. r decreases and s increases.
D. r decreases and s decreases.

The basic SIR model for measles is modified to allow for the possibility that the measles are fatal. Which is true about the change in the diagram for the model?

A. A new group is added to the model but no arrows
B. A new arrow is added but no new groups
C. Both a new arrow and a new group are added
D. The diagram is unchanged.

A group of medical doctors researched ways to increase handwashing by children. They believe they can cut in half the chance children's chance of infection in half as a result. What will be the impact on the threshold population?

A. Cut the threshold population in half.
B. Double the threshold population.
C. No changed in the threshold population.
D. Increase the threshold population by 2%.

In the basic SIR model, the parameter b is calculated as

A. 1/(time in S)
B. 1/(time in I)
C. 1/(time in R)
D. chance of infection/#contacts

Suppose species a and b are modeled by the equations

$$\frac{\Delta a}{\Delta t} = 0.7a - 0.014a^2 - 0.01ab$$

$$\frac{\Delta b}{\Delta t} = 0.3b - 0.01b^2 - 0.02ab$$

a) Label the skew lines in the phase plane below as $\Delta a = 0$ or $\Delta b = 0$.
b) Add arrows to the regions of the diagram
c) Interpret the phase plane biologically.
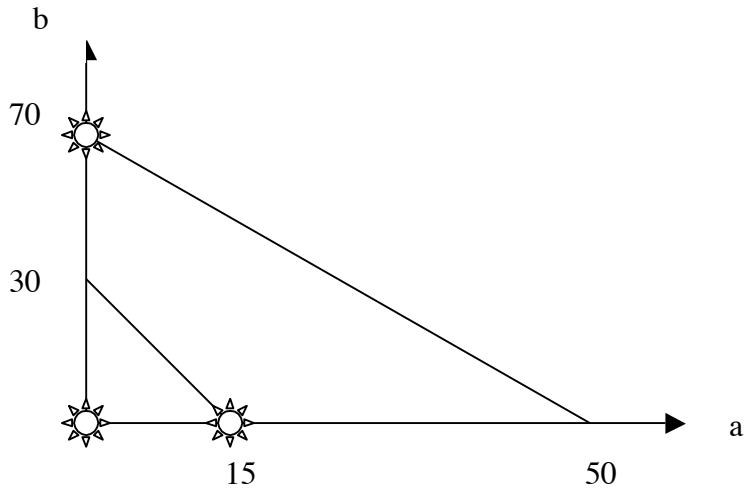
Where ☼ denotes an equilibrium point.