2. Review: modeling 1 species populations

Review: modeling a single population

Video

Download video file

Transcripts

Download SubRip (.srt) file

Download Text (.txt) file

Review: stability of critical points of the logistic equation

0 points possible (ungraded, results hidden)
(Note this problem is for review and has zero weight towards your grade.)

Recall (from the course *Introduction to differential equations*) the logistic equation modeling a single population x:

$$\dot{x} = (a - bx)x$$

where a (in $\mathbf{time}^{-1}$) is the natural growth rate and a/b (in the same units as x) is the carrying capacity of the population.

Let $a = 3, b = 1.$ Find the signs of the derivative $\dot{x}$ in the following intervals:

$x < 0$	$0 < x < 3$	$x > 3$
◉ $\dot{x} < 0$	○ $\dot{x} < 0$	◉ $\dot{x} < 0$
○ $\dot{x} = 0$	○ $\dot{x} = 0$	○ $\dot{x} = 0$
○ $\dot{x} > 0$	◉ $\dot{x} > 0$	○ $\dot{x} > 0$

Submit You have used 1 of 2 attempts

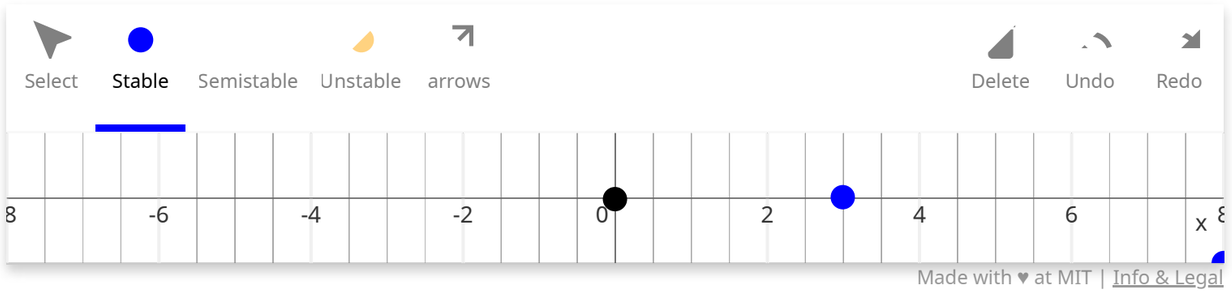
Review: Sketch the phase line

0 points possible (ungraded, results hidden)
(Note this problem is for review and has zero weight towards your grade.)

Sketch the phase line of the logistic equation

$$\dot{x} = (3 - x)x.$$

(Use the point tool labeled **stable** to mark any stable critical point, the one labeled **semi-stable** to mark any semi-stable critical point, and the one labeled **unstable** to mark any unstable critical point. Use the **arrows** tool to draw one arrow in each relevant interval.)



Submit You have used 1 of 10 attempts

Answer submitted.

2. Review: modeling 1 species populations

Hide Discussion

Topic: Final project: Applications to nonlinear differential equations / 2. Review: modeling 1 species populations

Add a Post

Show all posts ▼ by recent activity ▼

There are no posts in this topic yet.

✖