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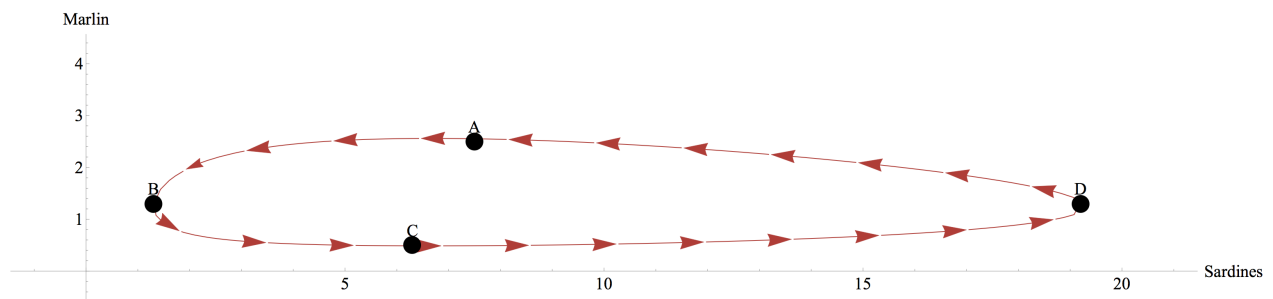
1.5.2 Quiz: Populations Oscillate

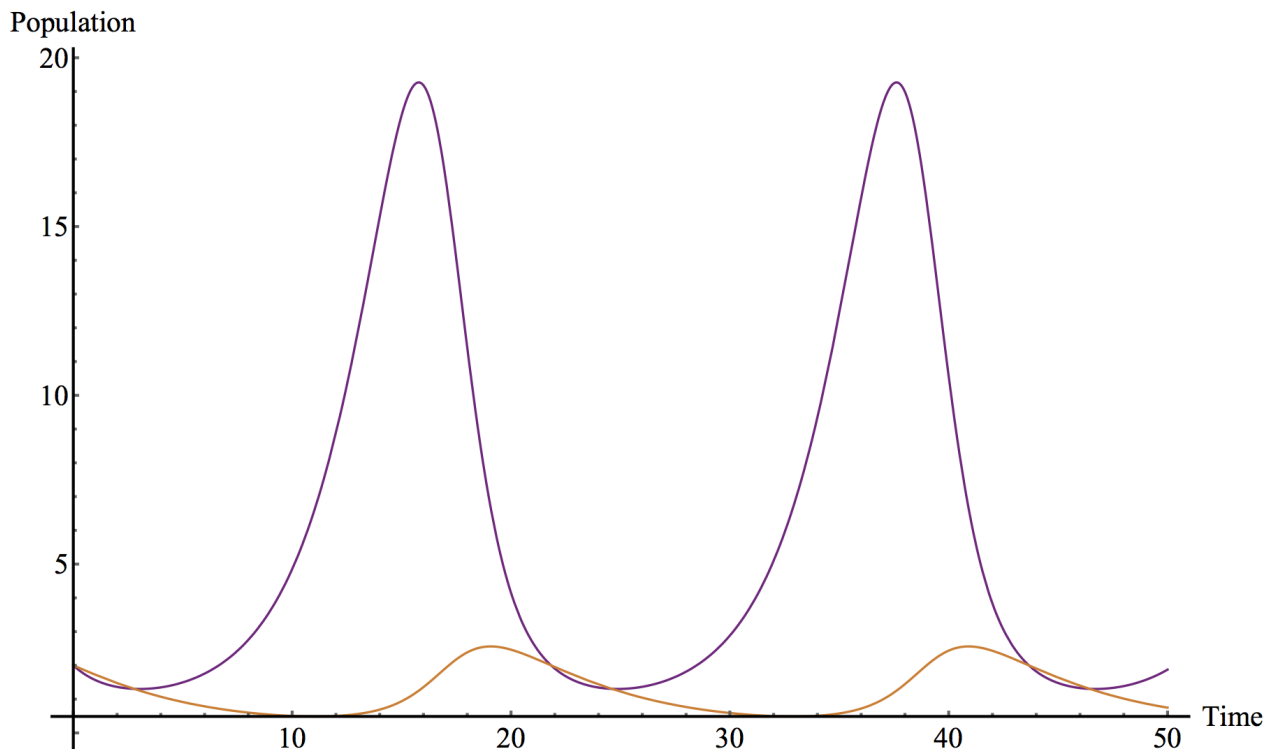⊞Bookmark this page

Question 1

4/4 points (graded)

Match each of the points indicated on the cycle with the time it occurs during the first cycle. (Here time is measured in quarter years (3 month periods).)

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(Hint: Look at the number of marlin and sardines at each point. Are either at a maximum? a minimum? How would this show up on the graph of number of sardines versus time? On the graph of number of marlin versus time?)

A	B	C	D
t ≈ 19 ▼	t ≈ 3 ▼	t ≈ 11 ▼	t ≈ 16 ▼
✔Answer: t ≈ 19	✔Answer: t ≈ 3	✔Answer: t ≈ 11	✔Answer: t ≈ 16

Explanation

At point A, the sardine population is neither at a maximum nor minimum (there are roughly 700,000 sardines) but the marlin population appears to be at a max of about 250. Thus this should correspond to the maximum on the curve indicating the size of the marlin population, which occurs at $t \approx 19$.

At point B, the sardine population is at a minimum. By looking at the graph of size of sardine population versus time this occurs at approximately $t = 3$.

We can find the corresponding times for points C and D using similar strategies.

Submit   You have used 1 of 3 attempts

🛈   Answers are displayed within the problem

Question 2

1/1 point (graded)

The **cycle length**, L, of a closed trajectory traced out by the points $(S(t), M(t))$, is the amount of time it takes for the populations to return to their initial values.

What is the approximate value of L?

○ $L \approx 10$

○ $L \approx 12$

○ $L \approx 20$

◉ $L \approx 22$ ✔

○ $L \approx 44$

Explanation

Approximately 22. This is about 22 quarter years, so about 22/4 years, a cycle length of a little over 5 years.

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ⓘ   Answers are displayed within the problem

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