



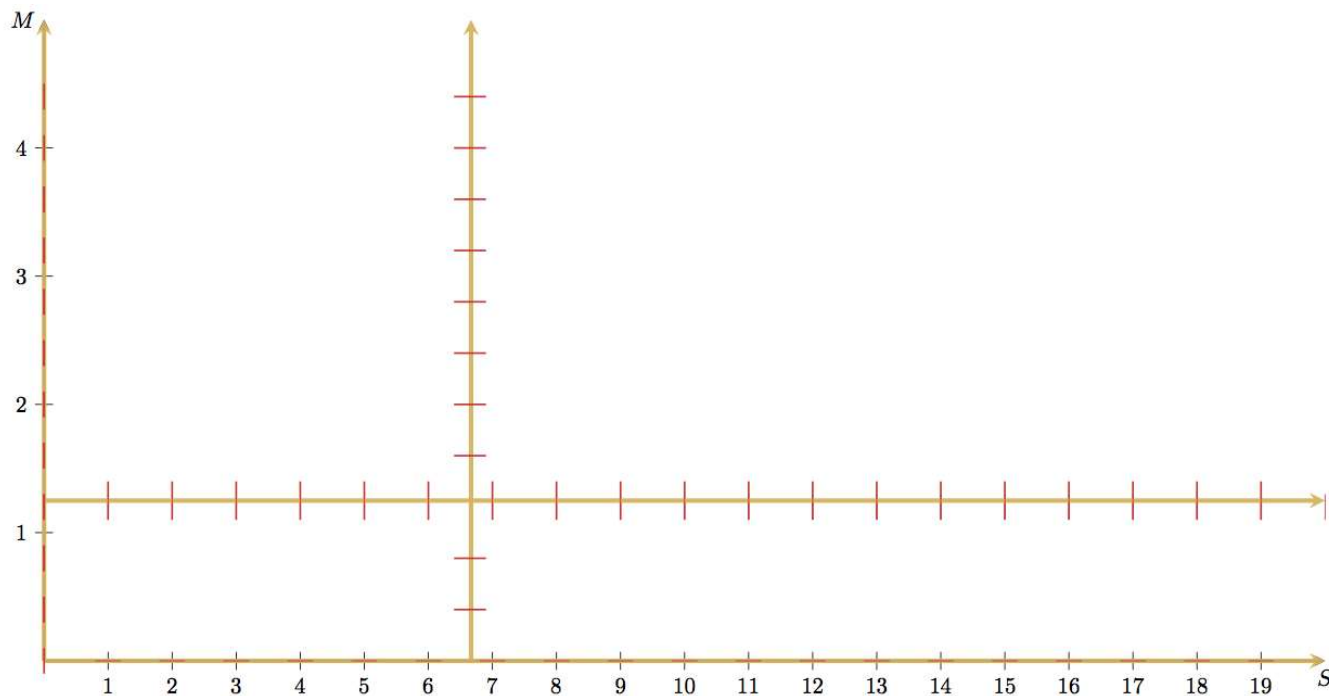
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1.4.5 Quiz Part 3: Creating a Phase Plane

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You now found lines along which the population of marlin is constant and only the population of sardines is changing.

- Draw short segments perpendicular to the M -axis along these lines, to become arrows later.



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Image Description

Equilibrium points are points (S, M) where neither $M(t)$ nor $S(t)$ is changing, where $\frac{dS}{dt} = 0$ and $\frac{dM}{dt} = 0$. Each such point represents an **equilibrium solution** of the system of differential equations: both populations are constant for all time.

Question 5

2/2 points (graded)

There are two points where both $\frac{dS}{dt} = 0$ and $\frac{dM}{dt} = 0$. One is $(0, 0)$. What is the other point?

X-Coordinate:

✓ Answer: 6.67

Y-Coordinate:

✓ Answer: 1.25

Explanation

The equilibrium points are $(0, 0)$ and $(\frac{20}{3}, \frac{5}{4})$. Note that at $(0, \frac{5}{4})$ we have $\frac{dM}{dt} \neq 0$ and at $(\frac{20}{3}, 0)$ we have $\frac{dS}{dt} \neq 0$, so these are not equilibrium points.

You have used 1 of 2 attempts

i Answers are displayed within the problem



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