A person and person in a boat

Description automatically generatedA red canoe with a black background

Description automatically generated How Many Canoes Are Available?

A canoe rental livery rents out canoes to customers to use on a nearby river. The livery has 80 canoes available. The rate of change of the number of canoes available at the livery on a Saturday can be modeled by the function for , where is measured in canoes per hour, and is measured in hours since the livery opened. The graph of is shown.

A graph with lines and numbers

Description automatically generated

1. What does it mean in this context if is below the -axis?
2. What does it mean in this context if is above the -axis?
3. The function is defined as .
   1. Find . Interpret your answer in the context of this problem.
   2. Find . Interpret your answer in the context of this problem.
4. Write an equation for and find . Interpet your answer in context.
5. When is the number of canoes available decreasing? How do you know?
6. When is the number of canoes available at a minimum? Justify your answer.
7. When is the number of canoes available increasing at a decreasing rate? Justify your answer.

Lesson 6.6 – Justifying Behavior of Accumulation Functions

QuickNotes

Check Your Understanding

1. Let be a function defined for . The graph of is shown. Let .
   1. A graph of a function

      Description automatically generatedFind and .
   2. Find all values of on the open interval where has a relative minimum. Justify your answer.
   3. On which interval(s) is the graph of concave up? Justify your answer.
   4. For which values of does have a point of inflection? Justify your answer.

* 1. For which value of does the graph of have an -intercept? Explain.