Under Cover Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| You have just taken over as manager of a struggling umbrella company. Umbrellas are manufactured at a rate given by umbrellas per hour for , and *t* represents hours after the factory opens in the morning (6 AM). is graphed below. |



A close up of a device

Description automatically generated

1. After a leisurely breakfast, you arrive at work at 9 AM.
2. Write an expression that gives the number of umbrellas that have been produced before you even arrived.
3. Roughly how many umbrellas were produced during this time?
4. At 12:30 PM you break for a long lunch.
   1. Write an expression that gives the number of umbrellas that have been produced that day up until your lunch break.
   2. Roughly how many umbrellas were produced during this time?
5. Write an equation involving an integral for a function , that gives the number of umbrellas produced *x* hours after the factory has opened.
6. Find and interpret your answer in the context of this problem.
7. When is changing the fastest? How do you know?

Topic 6.4—Accumulation Functions and the FTC

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| Important Ideas: |

Check Your Understanding!

1. The graph of is shown below. Let .

A close up of a logo

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1. Find .
2. Find .
3. Find .
4. Let . Find
5. Let
   1. Find a formula for that does not include integrals.
   2. Use your answer in part a) to find .
   3. How do parts a) and b) illustrate the Fundamental Theorem of Calculus?