Calculus

4.1 Interpreting the Derivative in Context

Notes

Write your questions and thoughts here!

Recall:

Slope between two points: — or ________

Units for the Derivative:

The derivative of $f(x)$ is ______

If $f'(x) > 0$, then $f(x)$ is

If $f'(x) < 0$, then $f(x)$ is

1. Mr. Sullivan wants Mr. Brust to finish creating his packets in Algebra 2. The number of packets Mr. Brust has completed is modeled by $p(w)$, where w is measured in weeks.
   a. Interpret $p(10) = 1$ in the context of the problem.

   b. Interpret $p'(39) = 4$ in the context of the problem.

2. The rate at which Mr. Kelly is buying baseball cards per year is modeled by $b(t)$, where t is measured in years.
   a. Interpret $b(3) = 150$ in the context of the problem.

   b. Interpret $b'(4) = 10$ in the context of the problem.

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Practice

For each problem, a differentiable function is given along with a definition of the variables. Interpret the values in the context of the problem.

1. The percentage grade a student receives on a test, is modeled by $G(t)$ where t is the number of hours spent studying for the test. Interpret $G'(1) = 3$.

2. Mr. Bean rides his motor scooter to work some days. His distance from home can be modeled by $d(t)$ meters where t is measured in minutes. Interpret $d'(15) = 650$.

3. The rate at which a factory produces baseball hats can be modeled by $b(t)$ where $b(t)$ is the number hats produced per hour and t is the number of hours since the factory opens. Interpret $b'(1) = 100$.

4. Mr. Brust has entered a Biggest Loser contest and is hoping to lose some of those holiday calories. His weight gain or loss can be modeled by $p(t)$, where p is measured in pounds per week and t is weeks since he started his diet. Interpret $p'(4) = -1$.

5. The number of gallons of water in a storage tank at time t, in minutes, is modeled by $w(t)$. Interpret $w'(10) = -8$.

6. The rate at which the temperature is changing is modeled by $T(h)$, where T is measured in degrees per hour and h is hours since midnight. Interpret $T'(20) = -0.5$.

7. A harbor's water depth changes with the ocean tides. The rate of change of the depth of the water is modeled by $d(t)$, where d is measured in feet per hour and t is hours. Interpret $d'(2) = -3$.

8. The height of a rocket is modeled by $h(t)$ meters where t is measured in seconds. Interpret $h'(10) = 30$.

9. The time it takes for a chemical reaction to occur can be modeled by $t(A)$, where t is the time, in minutes, and A is the catalyst used, measured in milliliters. Interpret $t'(40) = 1.7$.

10. A tire is leaking air pressure because of a small hole. The function $p(t)$ models the amount of air pressure (psi) in the tire after t minutes. Interpret $p'(3) = -2$.

No test prep for this lesson.