

Name: \_\_\_\_\_

3450:221-007

Notes Quiz

September 16, 2003

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To receive full credit, you must show your work, and all your explanations must use complete sentences. Use any calculator you like or none at all.

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1. If an arrow is shot upward on the moon with a velocity of 58 m/s, its height in meters after  $t$  seconds is given by  $h(t) = 58t - 0.83t^2$ . Find the average velocity over the time interval  $[1, 1.1]$ .
  
  
  
  
  
  
  
  
  
  
2. Complete the following definition: The limit of  $f(x)$  as  $x$  approaches  $a$  equals  $L$  if for all  $\epsilon > 0$  there is a  $\delta > 0$  so that...
  
  
  
  
  
  
  
  
  
  
3. Prove that  $\sin(x) = 2 - x$  has at least one real root. (Hint: Use the Intermediate Value Theorem.) **Do not find the root.** Rather find an interval that contains the root.
  
  
  
  
  
  
  
  
  
  
4. Write down a mathematical expression (definition) for  $f'(a)$ . What does  $f'(a)$  mean geometrically?