Homework Assignment 3.

Assigned Sep 29, 2005

1. Is the following statement true or false?

   If the function $y = f(x)$ defined on $[a, b]$ takes any value between $f(a)$ and $f(b)$, then $f(x)$ is continuous on $[a, b]$.

2. Read 3.1: Examples 10; 3.2: Example 13; 3.3: definition for average rate of change (velocity) and instant rate of change (velocity).

3. Section 3.4: problems 19, 20, 27, 28, 53, 54.
   Section 3.5: problems 14, 22, 24, 30, 40.

4. Show (and memorize) that

$$\frac{d}{dx}\begin{vmatrix} f(x) & g(x) \\ h(x) & k(x) \end{vmatrix} = \begin{vmatrix} f'(x) & g(x) \\ h'(x) & k(x) \end{vmatrix} + \begin{vmatrix} f(x) & g'(x) \\ h(x) & k'(x) \end{vmatrix}$$
$$= \begin{vmatrix} f'(x) & g'(x) \\ h(x) & k(x) \end{vmatrix} + \begin{vmatrix} f(x) & g(x) \\ h'(x) & k'(x) \end{vmatrix}$$

   using product rule. What is the corresponding formula for a 3 by 3 determinant?