

## Homework Assignment for Week 03

Assigned Sep 29, 2011.

1. Read section 3.2: Example 13; section 3.3: definition for average rate of change (velocity) and instant rate of change (velocity).
2. Section 3.2: problems 17, 21, 25, 27, 33, 37, 57, 67.
3. Section 3.4: problems 15, 19, 27, 53.
4. Section 3.5: problems 13, 21, 23, 29, 39.
5.  $\frac{d}{dx}(f_1(x)f_2(x)\cdots f_n(x)) = ?$   
 $\frac{d^n}{dx^n}(f(x)g(x)) = ?$
6. Show (and memorize) that

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

using product rule. What is the corresponding formula for a 3 by 3 determinant? How about 4 by 4, etc?