Homework Assignment for Week 03

1. Section 3.1: problems 40, 49.

2. Section 3.2: problems 17, 21, 25, 27, 33, 37(Remark: read Example 13 in section 3.2), 57, 67.

3. Read section 3.3 on definition for average rate of change (velocity) and instant rate of change (velocity).

4. Section 3.4: problems 15, 19, 27, 53.

5. Section 3.5: problems 13, 21, 23, 29, 39.

6. (s3.5 extra1)

   $\frac{d}{dx}(f_1(x)f_2(x)\cdots f_n(x)) =?$

   $\frac{d^n}{dx^n}(f(x)g(x)) =?$

7. (s3.5 extra2)

   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? How about 4 by 4, etc?