

Homework Assignment for Week 03

1. Section 3.2: problems 17, 54, 57, 48.
2. Section 3.3: problems 47, 55, 67, 70.
3. $\frac{d^n}{dx^n}(f(x)g(x)) = ?$ Memorize the result.
4. Use product rule to show (and memorize) that

$$\begin{aligned} \frac{d}{dx} \begin{vmatrix} f_{11}(x) & f_{12}(x) \\ f_{21}(x) & f_{22}(x) \end{vmatrix} &= \begin{vmatrix} f'_{11}(x) & f_{12}(x) \\ f'_{21}(x) & f_{22}(x) \end{vmatrix} + \begin{vmatrix} f_{11}(x) & f'_{12}(x) \\ f_{21}(x) & f'_{22}(x) \end{vmatrix} \\ &= \begin{vmatrix} f'_{11}(x) & f'_{12}(x) \\ f_{21}(x) & f_{22}(x) \end{vmatrix} + \begin{vmatrix} f_{11}(x) & f_{12}(x) \\ f'_{21}(x) & f'_{22}(x) \end{vmatrix} \end{aligned}$$

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

5. Section 3.5: problems 17, 49, 57, 58.