

## Study Guide for Chap 03

1. Study product rule and applications as higher derivative of product, multiple products, determinants, etc.
2. Study the proof of Chain rule in section 3.11.
3. Practice on  $df/dx$  where the function  $f(x)$  is a combination (multiplication, division, composition) of elementary functions.
4. Study the derivation for derivative of inverse functions.
5. Study how to find derivative of a function through implicit differentiation. Also study higher order derivatives.
6. Study how to find approximate value of functions using linear approximation (linearization) such as  $(1+x)^k$  and  $(1+x)/(1+y)$ , etc. and how to estimate the error of the linear approximation.