


Lecture 1 - Section 7

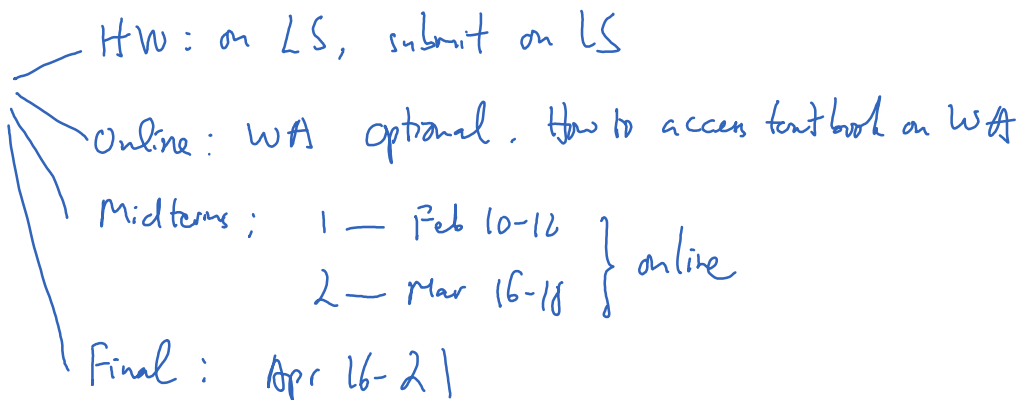
Monday, January 11, 2021 8:34 PM

* Prayer

* Spiritual thought: Understanding surfaces help you...

* Syllabus:

1) Instructor info. 

2) Grading 

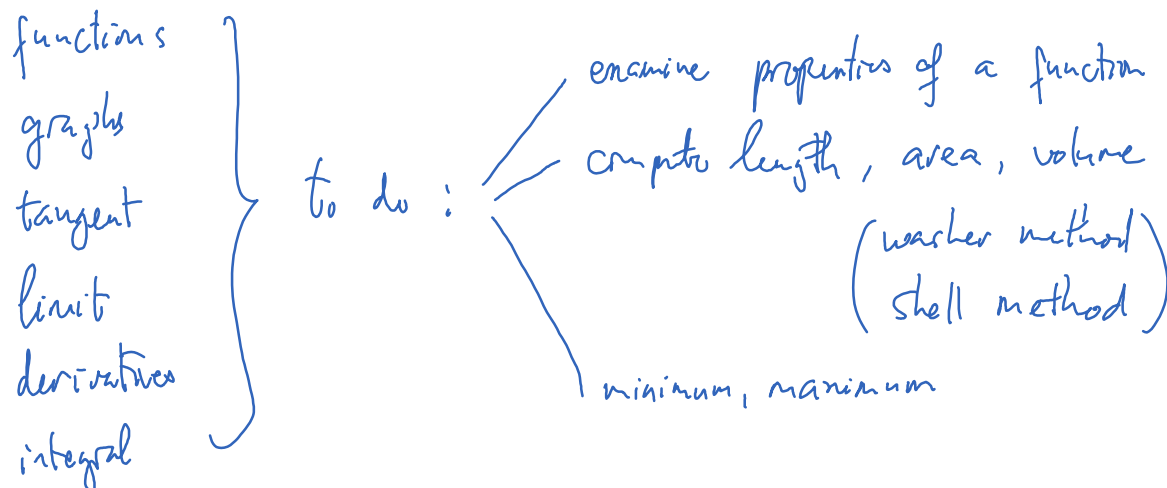
3) Mathematica: instruction on Syllabus. will talk more about it later.

4) Office hours: on Zoom. Note: there are two Zoom links, one for the class meeting, one for office hours.

About the course:

Calculus on Functions of several variables.

* What did you learn in Calc. I (Math 112)?



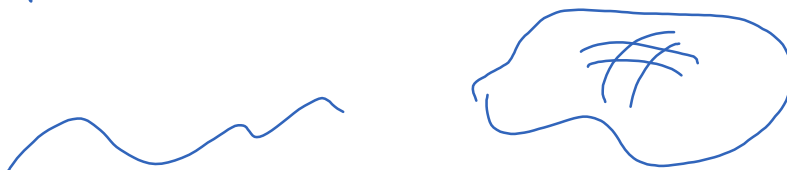
Ex Show that $\sin x \leq x \quad \forall x \in [0, \pi]$

$$\underbrace{\sin x - x}_{f(x)} \leq 0 ?$$

$$f'(x) = \cos x - 1 \leq 0$$

Ex Show that $a^2 b \leq \frac{2}{3} a^3 + \frac{1}{3} b^3 \quad \forall a, b > 0$

partial derivative



3D coord. system

x, y, z

{ right hand rule
 head & eye rule

points vs vectors

$$A(1, 2, -1)$$

position

$$a = \langle 1, 2, -1 \rangle$$

displacement

velocity (rate of change of position)

Distance : region \rightarrow x, y, z

$$A(x_1, y_1, z_1)$$

$$B(x_2, y_2, z_2)$$

$$AB =$$



Distance from a point to a line

_____ sphere

_____ plane

$$A(1, 2, 3)$$

$$\text{plane } x + y + z = 3$$