

Math 1210-2
Friday Dec. 7.

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We must discuss the amazing Pappus' Theorem

- because it ties together many of chapter 5 ideas
- because it reminds us to not underestimate previous civilizations.

(Page 4 Wednesday notes).

Review session Saturday 12/8 (tomorrow)
here (JWB 335)

1:30 - 3:00 p.m.

We'll go over "practice final" = actual final exam 2003. Solutions are posted, along with links to 2003 practice final & solutions

- Final exam will address concepts, computations, applications. (Tuesday 8-10 a.m.)
- You may use 1 customized 4x6 card of formulas
- I will provide the Varberg pull-out sheet ("Formula card"), as part of the final exam

Key concepts

Derivative

average & instantaneous rate of change

precise limit def
$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

graphical interpretations
antiderivatives

Definite integral

precise limit def

$$\int_a^b f(x) dx = \lim_{\|P\| \rightarrow 0} \sum_{i=1}^n f(\bar{x}_i) \Delta x_i$$

FTC, which relates these two fundamental concepts:

$$\int_a^b f(x) dx = F(b) - F(a) \quad \text{if } F'(x) = f(x) \text{ on } [a, b].$$

Quick computations

limits (know limit thems)

differentiation (know differentiation rules!)

antidifferentiation

definite integrals

substitution in definite & indefinite integrals

numerical integration (trap., parab. rules)

Applications (not all of these fit on one exam; I will need to make choices! Make sure to learn chapter 5, because up to 40% of the final exam could draw on this material.)

velocity, acceleration, position

implicit differentiation

related rates

max-min

graphing

INC, DEC, CV, CD, asymptotes, extrema

separable DE's

area of regions in the plane

average value

volumes

slabs (planar slicing), including disks & washers

cylindrical shells

curve length

surface area of revolution

work

moments & centers of mass

Pappus' thm.

chapter 5!