Final Exam info for our class: Tuesday, December 10th, 10:15am-12:15pm, ENGRA 111 Rows 3,5,7 orange seats; every other seat.

Sections covered on Final Exam for MATH 150

Chapter 1.
1.1 & 1.2 are review and not explicitly on final.
1.3-1.6 (but not the epsilon-delta stuff)

Chapter 2.
2.1-2.7 (does include formal definition of derivative)
2.8 not included

Chapter 3.
3.1-3.3
3.4 not included
3.5 & 3.6 covered lightly
3.7 not included but students can use l'Hospital's rule

Chapter 4.
4.1-4.5,
4.6 not included
4.7

Chapter 5.
5.1-5.5

This table is from Chapter 6 and is a summary of Chapter 5.

Because of the Fundamental Theorem of Calculus, we can integrate a function if we know an derivative, that is, an indefinite integral. We summarize here the most important integrals that have learned so far.

$$\int x^n\,dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1) \qquad \int \frac{1}{x}\,dx = \ln|x| + C$$

$$\int e^x\,dx = e^x + C \qquad \int a^x\,dx = \frac{a^x}{\ln a} + C$$

$$\int \sin x\,dx = -\cos x + C \qquad \int \cos x\,dx = \sin x + C$$

$$\int \sec^2 x\,dx = \tan x + C \qquad \int \csc^2 x\,dx = -\cot x + C$$

$$\int \sec x \tan x\,dx = \sec x + C \qquad \int \csc x \cot x\,dx = -\csc x + C$$

$$\int \sinh x\,dx = \cosh x + C \qquad \int \cosh x\,dx = \sinh x + C$$

$$\int \tan x\,dx = \ln|\sec x| + C \qquad \int \cot x\,dx = \ln|\sin x| + C$$

$$\int \frac{1}{x^2 + a^2}\,dx = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + C \qquad \int \frac{1}{\sqrt{a^2 - x^2}}\,dx = \sin^{-1}\left(\frac{x}{a}\right) + C, \quad a > 0$$