Math 128 : Calculus 2 for the Sciences **Winter 2016**

Lecture 1: January 4, 2016

Lecturer: Jen Nelson *Notes By: Harsh Mistry*

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Midterm date : Feb 22nd, 2016

1.1 Review : Definite Integral

Definition 1.1

$$\int_a^b f(x)dx = \lim_{n\to\infty} \sum_{i=1}^{n} \Delta x f(x_i)$$

1.2 Review : The Fundamental Theorem of Calculus

If f is continuous on [a,b] then,

Part A,

$$\frac{d}{dx}\int_a^x f(x)dx = F(x)$$

Part B,

$$\int_a^b f(x)dx = F(b) - F(a)$$

1.3 Review : The Indefinite Integral

General Antiderivative

$$\int f(x)dx = F(x) + c$$

The indefinite integral is a family of functions and its repersents all functions woose derivatives are f

Relationship :

$$\int_a^b f(x)dx = \left[\int f(x)dx\right]_a^b$$

1.4 Review : U-Subsitution

if u = f(x) is differentiable on interval I and f is continuous on the range of g, then

$$\int f(g(x))g\prime(x)dx = \int f(u)du = F(u) + c$$

Sample Problem

$$\int \frac{x^3}{(x+5)^2}$$

End of Lecture Notes
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