

Quiz 10

Dec. 26, 2007

1. (5 pts) Use Riemann Sums to compute the given definite integral

$$\int_0^1 x^2 dx$$

2. (5 pts) Use the Fundamental Theorem to compute the given definite integral

$$\int_0^1 x^2 dx$$

3. (10 pts) Given $F(x) = \int_x^{x^2} \sqrt{t^2 + 1} dt$, use the Fundamental Theorem to compute $F'(x)$

-
- Theorem 1.1 If n is any positive integer and c is any constant, then

$$\sum_{i=1}^n c = cn, \quad \sum_{i=1}^n i = \frac{n(n+1)}{2}, \quad \sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$

- Fundamental Theorem of Calculus Part I: If f is continuous on $[a, b]$ and $F(x)$ is any antiderivative of f , then $\int_a^b f(x)dx = F(b) - F(a)$.
- Fundamental Theorem of Calculus, Part II: If f is continuous on $[a, b]$ and $F(x) = \int_a^x f(t)dt$, then $F'(x) = f(x)$, on $[a, b]$.