(9/30/08)

Math 10B. Lecture Examples.

Section 6.4. Second Fundamental Theorem of Calculus[†]

Example 1 **Find the derivative** $\mathbf{\dfrac{d}{dx}\displaystyle\int_1^x \sqrt{t^4+7}\,dt}$.

Answer: $\dfrac{d}{dx}\displaystyle\int_1^x \sqrt{t^4+7}\,dt = \sqrt{x^4+7}$

Example 2 **What is the derivative of** $\mathbf{G(x) = \displaystyle\int_x^4 \sin^4 t\,dt}$ **at** $\mathbf{x = \frac{1}{2}\pi}$**?**

Answer: $G'\left(\frac{1}{2}\pi\right) = -1$

Interactive Examples

Work the following Interactive Examples on Shenk's web page, http//www.math.ucsd.edu/~ashenk/:[‡]

Section 6.4: Examples 1 and 2

[†]Lecture notes to accompany Section 6.4 of *Calculus* by Hughes-Hallett et al.

[‡]The chapter and section numbers on Shenk's web site refer to his calculus manuscript and not to the chapters and sections of the textbook for the course.