

Project Based Math 112, Fall 2001
Activity #3
Part I: Barehands Integration (15 min.)

1. Using the definition of the definite integral, calculate $\int_0^b x \, dx$.

2. Use this to find $F_1(h)$, where $F_1(h) = \int_0^h x \, dx$.

3. Use the definition of the definite integral to calculate $\int_a^b x \, dx$.

4. Express the answer to (3) in terms of F_1 .

OVER \implies

Part II: Properties of Integrals (15 min.)

Justify the equalities below, using what you know about the properties of sums, and the definition of the definite integral.

(Below, c is any constant.)

5. $\int_a^b [f(x) + g(x)] dx =$ $= \int_a^b f(x) dx + \int_a^b g(x) dx$

6. $\int_a^b cf(x) dx =$ $= c \int_a^b f(x) dx$

7. If $f(x) \geq 0$ for $a \leq x \leq b$, then $\int_a^b f(x) dx \geq 0$.

8. If $f(x) \geq g(x)$ for $a \leq x \leq b$, then $\int_a^b f(x) dx \geq \int_a^b g(x) dx$.