

MAT 202
Assignment 3
Tuesday, February 8, 2010

For full credit on these problems, each must be submitted with a complete and clear solution, showing all of your work. You may work with other classmates on these problems, but please indicate on your assignment if you received help. Partial answers and incomplete solutions may be eligible for some partial credit, depending on the level of completeness and demonstrated understanding.

1. Evaluate $\int_1^3 x^2 dx$ using the limit definition, with *left* endpoints.
2. Use a geometric argument to evaluate each of the following integrals. A picture might help in your explanation.
 - (a) $\int_1^5 4 dx$
 - (b) $\int_2^6 x dx$
 - (c) $\int_a^b 2x dx$, where $0 < a < b$.
 - (d) $\int_0^a \sqrt{a^2 - x^2} dx$, where $a > 0$.
 - (e) $\int_0^3 |x - 1| + 2 dx$
3. Suppose $\int_a^b f(x) dx = 3$ and $\int_a^b g(x) dx = 1$. Find
 - (a) $\int_a^b f(x) + g(x) dx$
 - (b) $\int_a^b 3f(x) + 2g(x) dx$