

Integration Review Worksheet

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1 Exercises

- I. Use the limit definition of the definite integral to find $\int_0^1 x^3 dx$. Hint: consider the following summation

$$\sum_{i=1}^n i^3 = \frac{n^2(n+1)^2}{4}.$$

- II. Verify your answer to part IV using the fundamental theorem of calculus.
- III. Use u-substitution to evaluate the integral $\int_0^{\pi/2} \sin^3(x) \cos(x) dx$.