

Written Work 1

Due: Saturday, Jan 16, 2021

1. For each set of integrals decide which of the following is needed: 1) Substitution, 2) Algebra or a trig identity, 3) Nothing Needed (Can evaluate how it is written), or 4) Cannot be done by the techniques in Calculus I. Each set of integrals uses the four different techniques only once. Write which technique goes with which integral.

$$\int (x^3 + 1)dx$$

$$\int x^2(x^3 + 1)^4 dx$$

$$\int \sqrt{x^3 + 1} dx$$

$$\int (x^3 + 1)^2 dx$$

$$\int \sqrt{x}(1 - x^2)dx$$

$$\int \sqrt{1 - x^2} dx$$

$$\int \frac{1}{\sqrt{1 - x^2}} dx$$

$$\int \frac{x}{\sqrt{1 - x^2}} dx$$

$$\int \cos^2 x \sin^3 x dx$$

$$\int \sqrt{1 - \cos^2 x} dx$$

$$\int \frac{1}{\cos^2 x} dx$$

$$\int \frac{1}{\cos x \sqrt{\sin x}} dx$$

$$\int \tan x \sec x dx$$

$$\int \tan x \cos x dx$$

$$\int \frac{\sec^2 x}{\sqrt{\tan x}} dx$$

$$\int \frac{1}{\tan x + 1} dx$$

$$\int e^{-x^2} dx$$

$$\int \frac{e^x}{3 + e^x} dx$$

$$\int (e^x + 3) dx$$

$$\int \frac{\ln(e^{2x})}{x^2} dx$$

2. Evaluate each of the following integrals.

(a) $\int \frac{5}{n^3} \mathrm{d}n$

(b) $\int \frac{3p^4 - 2p}{p^2} \mathrm{d}p$