

Basic Integration Rules (7.1)

February 7th, 2019

*When integrating, we first try the basic integration rules for polynomials, trigonometric functions, exponential/logarithmic functions, and inverse trigonometric functions. When those don't apply, we attempt u-substitution.

If all those techniques fail, here are some algebraic manipulations to try:

Expand the numerator

Separate the numerator

Complete the square

Divide improper rational function

Add and subtract extra terms in numerator

Use trigonometric identities

Multiply and divide by Pythagorean conjugate

***Use these techniques to evaluate the following integrals

Ex: Find the indefinite integral.

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

B) $\int \frac{2x}{x^2 + 2x + 1} dx$

C) $\int \frac{1}{1 + \sin x} dx$

D) $\int \frac{x^2}{x^2 + 1} dx$

E) $\int \cot^2 x dx$