

Inverse Trigonometric Functions: Integration (4.7)

March 4th, 2019

I. Integrals Involving Inverse Trigonometric Functions

Thm. 4.20: Integrals Involving Inverse Trigonometric Functions: Let u be a differentiable function of x , and let

$$a > 0$$

$$1. \int \frac{du}{\sqrt{a^2 - u^2}} = \arcsin \frac{u}{a} + C$$

$$2. \int \frac{du}{a^2 + u^2} = \frac{1}{a} \arctan \frac{u}{a} + C$$

$$3. \int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \operatorname{arcsec} \frac{|u|}{a} + C$$

Ex. 1: Find each indefinite integral.

a. $\int \frac{4}{1+9x^2} dx$

b. $\int \frac{x+5}{\sqrt{9-(x-3)^2}} dx$

Ex. 2: Evaluate the definite integral.

$$\int_0^{\pi/4} \frac{2dx}{1+x^2}$$