

Objective: Integrate functions whose antiderivatives involve inverse trigonometric functions.

Find the indefinite integral $\int \frac{\arcsin x}{\sqrt{1-x^2}} dx$.

ANSWER:

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

Let $u = \arcsin x$

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

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

$$\begin{aligned} \text{so, } \int u \, du &= \left[\frac{u^2}{2} \right] + C \\ &= \frac{1}{2}(\arcsin)^2 + C \end{aligned}$$