

## Additional Problems on Definite Integrals Involving Inverse Trig Functions

Contents

Readability

Resources

Tools

In exercises 1 - 6, evaluate each integral in terms of an inverse trigonometric function.

$$1) \int_0^{\sqrt{3}/2} \frac{dx}{\sqrt{1-x^2}}$$

**Answer:**

$$2) \int_{-1/2}^{1/2} \frac{dx}{\sqrt{1-x^2}}$$

$$3) \int_{\sqrt{3}}^1 \frac{dx}{1+x^2}$$

**Answer:**

$$4) \int_{\frac{1}{\sqrt{3}}}^{\sqrt{3}} \frac{dx}{1+x^2}$$

$$5) \int_1^{\sqrt{2}} \frac{dx}{|x|\sqrt{x^2-1}}$$

**Answer:**

$$6) \int_1^{\frac{2}{\sqrt{3}}} \frac{dx}{|x|\sqrt{x^2-1}}$$

## Answers to odds

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In exercises 1 - 6, evaluate each integral in terms of an inverse trigonometric function.

$$1) \int_0^{\sqrt{3}/2} \frac{dx}{\sqrt{1-x^2}}$$

**Answer:**

$$\int_0^{\sqrt{3}/2} \frac{dx}{\sqrt{1-x^2}} = \arcsin x \Big|_0^{\sqrt{3}/2} = \frac{\pi}{3}$$

$$2) \int_{-1/2}^{1/2} \frac{dx}{\sqrt{1-x^2}}$$

$$3) \int_{\sqrt{3}}^1 \frac{dx}{1+x^2}$$

**Answer:**

$$\int_{\sqrt{3}}^1 \frac{dx}{1+x^2} = \arctan x \Big|_{\sqrt{3}}^1 = -\frac{\pi}{12}$$

$$4) \int_{\frac{1}{\sqrt{3}}}^{\sqrt{3}} \frac{dx}{1+x^2}$$

$$5) \int_1^{\sqrt{2}} \frac{dx}{|x|\sqrt{x^2-1}}$$

**Answer:**

$$\int_1^{\sqrt{2}} \frac{dx}{|x|\sqrt{x^2-1}} = \operatorname{arcsec} x \Big|_1^{\sqrt{2}} = \frac{\pi}{4}$$