

Quadratic Expressions

$$\int \frac{1}{\sqrt{a^2 - u^2}} du = \sin^{-1}\left(\frac{u}{a}\right) + C$$

$$\int \frac{1}{a^2 + u^2} du = \frac{1}{a} \tan^{-1}\left(\frac{u}{a}\right) + C$$

$$\int \frac{1}{u\sqrt{u^2 - a^2}} du = \frac{1}{a} \sec^{-1}\left(\frac{u}{a}\right) + C$$

For problems 1 – 6, evaluate the integral.

1. $\int \frac{1}{9x^2 + 6x + 5} dx$

2. $\int \frac{1}{\sqrt{9 + 16x - 4x^2}} dx$

3. $\int x \sqrt{3 - 2x - x^2} \, dx$

4. $\int \frac{2x - 1}{x^2 - 6x + 13} \, dx$

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

6. $\int \frac{x}{\sqrt{5 + 12x - 9x^2}} \, dx$