$$\sin^2 u = \frac{1}{2}(1 - \cos 2u) \qquad \cos^2 u = \frac{1}{2}(1 + \cos 2u) \qquad \sin 2u = 2(\sin u \cos u)$$

$$\int \tan u \; du = \ln|\sec u| + C \qquad \int \sec u \; du = \ln|\sec u + \tan u| + C \qquad \int \frac{du}{u^x + a^2} = \frac{1}{a}\tan^{-1}\left(\frac{u}{a}\right) + C$$

1. Evaluate the integral $\displaystyle\int_0^1 x \cos^2 x \; dx$.

2. Evaluate the integral $\displaystyle\int \ln x \; dx$.

3. Evaluate the integral $\displaystyle\int \sin^3 t \; dt$.

4. Evaluate the integral $\displaystyle\int \sqrt{16 - x^2} \; dx$.

5. Evaluate the integral $\displaystyle\int \frac{\sqrt{x^2 - 1}}{x} \; dx$.

6. Evaluate the integral $\displaystyle\int \frac{x}{\sqrt{x^2 - 1}} \; dx$.

7. Evaluate the integral $\displaystyle\int \frac{\sqrt{9 - x^2}}{x^2} \; dx$.

8. Evaluate the integral $\displaystyle\int x^3 \sqrt{x^2 + 4} \; dx$.

9. Evaluate the integral $\displaystyle\int \sqrt{x^2 + 1} \; dx$.

10. Evaluate the integral $\displaystyle\int \frac{4x + 1}{x(x + 1)^2} \; dx$.