

1. Evaluate the integral $\int \frac{e^{\arctan x}}{x^2 + 1} dx$.
2. Evaluate the integral $\int \sin(\ln t) dt$.
3. Evaluate the integral $\int \sin^{10} \theta \cos^3 \theta d\theta$.
4. Evaluate the integral $\int_1^2 \frac{x^2 + 4}{x^3 + 2x} dx$.
5. Evaluate the integral $\int \frac{x^2}{\sqrt{1-x^2}} dx$.
6. Determine whether or not the improper integral converges. If it converges, find its value.

$$\int_0^3 \frac{1}{\sqrt[3]{x-1}} dx$$

ANSWERS:

1. $e^{\arctan x} + C$
 2. $\frac{1}{2}[t \sin(\ln t) - t \cos(\ln t)] + C$
 3. $\frac{\sin^{11} \theta}{11} - \frac{\sin^{13} \theta}{13} + C$
 4. $\frac{3 \ln 2}{2}$
 5. $\frac{\arcsin x}{2} - \frac{x\sqrt{1-x^2}}{2} + C$
 6. The integral is convergent to $\frac{3\sqrt[3]{4}-3}{2}$
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