

MTH 252Z Lab

Integrals of Trigonometric Functions

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Prompts

1. Evaluate $\int_0^{\frac{\pi}{2}} \sin^4 x \cos^3 x \, dx$.
2. Evaluate $\int \cos^3 y \sin^5 y \, dy$.
3. Evaluate $\int \sin^3 \theta \, d\theta$.
4. We need the Pythagorean Theorem *and* double-angle formulas to evaluate trigonometric integrals when the powers of sine and cosine are both even. Write down the double-angle formulas for sine and cosine.
5. Evaluate $\int \cos^2 \theta \, d\theta$.
6. Evaluate $\int \sin^4 \theta \, d\theta$.
7. Evaluate $\int \sin^4 x \cos^2 x \, dx$.
8. Evaluate $\int x \sin x \, dx$.
9. Evaluate $\int x \sin(x^2) \, dx$.