

Worksheet 1

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Evaluate the following indefinite integrals. Check your answers!

1. $\int \sqrt{t} \ln(t) dt.$

2. $\int \frac{x}{e^{2x}} dx.$

3. $\int \cos(x) e^{\sin(x)} dx.$

4. $\int e^{-\theta} \cos(2\theta) d\theta.$

Prove the reduction formulas

5. $\int x^n e^{-x} dx = -x^n e^{-x} + n \int x^{n-1} e^{-x} dx.$

6. $\int x^m (1-x)^n dx = \frac{x^{m+1} (1-x)^n}{m+1} + \frac{n}{m+1} \int x^{m+1} (1-x)^{n-1} dx.$

6'. Evaluate $\int_0^1 x^m (1-x)^n dx.$