
Evaluate the following integrals using the Fundamental Theorem of Calculus. You may need to use a u-substitution or integration by parts. You may use a graphing calculator (or software) to check your answer, but you must show all of your work evaluating them by hand.

1. $\int_3^5 (5x^2 - \frac{1}{x} + e^{2x})dx$

2. $\int_0^\infty e^{-2x} dx$

3. $\int_{-1}^2 xe^{x^2} dx$

4. $\int_0^1 xe^{2x} dx$

5. $\int_0^2 \int_0^1 xy^2 dy dx$