

1. Often an integral involving an exponential function can be transformed into a much simpler integral of the type $\int e^u du$ by using an appropriate u-substitution for the exponent.

(a) $\int e^{5x} dx$ Let $u = 5x$

(b) $\int e^{kx} dx$ Let $u =$

(c) $\int \frac{1}{e^x} dx$ Hint: Rewrite the integral as $\int e^{-x} dx$ and make use of your answer to part (b).

(d) $\int x^2 e^{x^3} dx$ Let $u = x^3$

(e) $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$ Let $u =$

2. Not every integral involving an exponential function is best integrated by substituting u for the exponent. Often, if the integrand involves more than one exponential function, it is best to substitute u for more than just the exponent.

(a) $\int \frac{e^x}{e^x + 1} dx$ Let $u = e^x + 1$

(b) $\int e^{2x} \sqrt{e^{2x} + 5} dx$ Let $u =$