Exp Integration Examples

TABLE 4.2 Antiderivative formulas, k a nonzero constant

Function	General antiderivative	Function	General antiderivative
1. x^n	$\frac{1}{n+1}x^{n+1} + C, \quad n \neq -1$	**8.** e^{kx}	$\frac{1}{k}e^{kx} + C$
		9. $\frac{1}{x}$	$\ln \lvert x \rvert + C, \quad x \neq 0$
		13. a^{kx}	$\left(\frac{1}{k \ln a}\right)a^{kx} + C, a > 0, a \neq 1$

EXAMPLE 3 Find the general antiderivative of each of the following functions.

(e) $j(x) = e^{-3x}$ **(f)** $k(x) = 2^x$

Solutions:

(e) $J(x) = -\frac{1}{3}e^{-3x} + C$ Formula 8 with $k = -3$

(f) $K(x) = \left(\frac{1}{\ln 2}\right)2^x + C$ Formula 13 with $a = 2, k = 1$ ■