

EXAMPLE 9 □ Evaluate $\int \sin 4x \cos 5x \, dx$.

SOLUTION This integral could be evaluated using integration by parts, but it's easier to use the identity in Equation 2(a) as follows:

$$\begin{aligned}\int \sin 4x \cos 5x \, dx &= \int \frac{1}{2}[\sin(-x) + \sin 9x] \, dx \\ &= \frac{1}{2} \int (-\sin x + \sin 9x) \, dx \\ &= \frac{1}{2}(\cos x - \frac{1}{9} \cos 9x) + C\end{aligned}$$

7.2 Exercises