Calculus Practice 3.3B5: Techniques for Finding Antiderivatives 8b

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 5\csc -x\cot -x \cdot 2^{\csc -x}\, dx;\; u = \csc -x$

2) $\int -\frac{4\csc^2 -4x}{\cot -4x}\, dx;\; u = \cot -4x$

3) $\int -5\sec^2 x \cdot e^{\tan x}\, dx;\; u = \tan x$

4) $\int -16\sec 4x\tan 4x \cdot e^{\sec 4x}\, dx;\; u = \sec 4x$

5) $\int -\frac{15\sin 5x}{\cos 5x}\, dx;\; u = \cos 5x$

6) $\int \frac{\csc^2 -x}{\cot -x}\, dx;\; u = \cot -x$

7) $\int -\frac{6\cos -3x}{\sin -3x}\, dx;\; u = \sin -3x$

8) $\int 25\csc^2 -5x \cdot 4^{\cot -5x}\, dx;\; u = \cot -5x$

9) $\int 20\sec -5x\tan -5x \cdot e^{\sec -5x}\, dx;\; u = \sec -5x$

10) $\int \frac{9\csc^2 -3x}{\cot -3x}\, dx;\; u = \cot -3x$

11) $\int -5\sin 5x \cdot e^{\cos 5x}\, dx;\ u = \cos 5x$

12) $\int 8\sec^2 -4x \cdot e^{\tan -4x}\, dx;\ u = \tan -4x$

13) $\int -\frac{12\csc^2 -4x}{\cot -4x}\, dx;\ u = \cot -4x$

14) $\int 12\cos -3x \cdot e^{\sin -3x}\, dx;\ u = \sin -3x$

15) $\int 5\sec^2 4x \cdot 4^{\tan 4x + 1}\, dx;\ u = \tan 4x$

16) $\int -\frac{9\sec^2 -3x}{\tan -3x}\, dx;\ u = \tan -3x$

17) $\int 5\csc -5x\cot -5x \cdot 4^{\csc -5x}\, dx;\ u = \csc -5x$

18) $\int -5\csc -5x\cot -5x \cdot 2^{\csc -5x + 1}\, dx;\ u = \csc -5x$

19) $\int -2\cos -x \cdot e^{\sin -x}\, dx;\ u = \sin -x$

20) $\int 3\sec^2 2x \cdot 2^{\tan 2x + 1}\, dx;\ u = \tan 2x$

Calculus Practice 3.3B5: Techniques for Finding Antiderivatives 8b

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 5\csc -x\cot -x \cdot 2^{\csc -x}\, dx;\ u = \csc -x$

$\frac{5 \cdot 2^{\csc -x}}{\ln 2} + C$

2) $\int -\frac{4\csc^2 -4x}{\cot -4x}\, dx;\ u = \cot -4x$

$-\ln \left|\cot -4x\right| + C$

3) $\int -5\sec^2 x \cdot e^{\tan x}\, dx;\ u = \tan x$

$-5e^{\tan x} + C$

4) $\int -16\sec 4x\tan 4x \cdot e^{\sec 4x}\, dx;\ u = \sec 4x$

$-4e^{\sec 4x} + C$

5) $\int -\frac{15\sin 5x}{\cos 5x}\, dx;\ u = \cos 5x$

$3\ln \left|\cos 5x\right| + C$

6) $\int \frac{\csc^2 -x}{\cot -x}\, dx;\ u = \cot -x$

$\ln \left|\cot -x\right| + C$

7) $\int -\frac{6\cos -3x}{\sin -3x}\, dx;\ u = \sin -3x$

$2\ln \left|\sin -3x\right| + C$

8) $\int 25\csc^2 -5x \cdot 4^{\cot -5x}\, dx;\ u = \cot -5x$

$\frac{5 \cdot 4^{\cot -5x}}{\ln 4} + C$

9) $\int 20\sec -5x\tan -5x \cdot e^{\sec -5x}\, dx;\ u = \sec -5x$

$-4e^{\sec -5x} + C$

10) $\int \frac{9\csc^2 -3x}{\cot -3x}\, dx;\ u = \cot -3x$

$3\ln \left|\cot -3x\right| + C$

11) $\int -5\sin 5x \cdot e^{\cos 5x}\, dx;\ u = \cos 5x$

$e^{\cos 5x} + C$

12) $\int 8\sec^2 -4x \cdot e^{\tan -4x}\, dx;\ u = \tan -4x$

$-2e^{\tan -4x} + C$

13) $\int -\frac{12\csc^2 -4x}{\cot -4x}\, dx;\ u = \cot -4x$

$-3\ln \left|\cot -4x\right| + C$

14) $\int 12\cos -3x \cdot e^{\sin -3x}\, dx;\ u = \sin -3x$

$-4e^{\sin -3x} + C$

15) $\int 5\sec^2 4x \cdot 4^{\tan 4x + 1}\, dx;\ u = \tan 4x$

$\frac{5 \cdot 4^{\tan 4x}}{\ln 4} + C$

16) $\int -\frac{9\sec^2 -3x}{\tan -3x}\, dx;\ u = \tan -3x$

$3\ln \left|\tan -3x\right| + C$

17) $\int 5\csc -5x\cot -5x \cdot 4^{\csc -5x}\, dx;\ u = \csc -5x$

$\frac{4^{\csc -5x}}{\ln 4} + C$

18) $\int -5\csc -5x\cot -5x \cdot 2^{\csc -5x + 1}\, dx;\ u = \csc -5x$

$-\frac{2 \cdot 2^{\csc -5x}}{\ln 2} + C$

19) $\int -2\cos -x \cdot e^{\sin -x}\, dx;\ u = \sin -x$

$2e^{\sin -x} + C$

20) $\int 3\sec^2 2x \cdot 2^{\tan 2x + 1}\, dx;\ u = \tan 2x$

$\frac{3 \cdot 2^{\tan 2x}}{\ln 2} + C$