Calculus Practice: Techniques for Finding Antiderivatives 4b

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 10\csc^2 -5x \cdot \cot^4 -5x \, dx$; $u = \cot -5x$

2) $\int -10\csc 5x\cot 5x \cdot \csc^3 5x \, dx$; $u = \csc 5x$

3) $\int 6\sin -2x \cdot \cos^4 -2x \, dx$; $u = \cos -2x$

4) $\int -16\cos -4x \cdot \sin^4 -4x \, dx$; $u = \sin -4x$

5) $\int 20\cos 5x \cdot \sin^5 5x \, dx$; $u = \sin 5x$

6) $\int -15\csc^2 5x \cdot \cot^4 5x \, dx$; $u = \cot 5x$

7) $\int 10\sec^2 2x \cdot \tan^3 2x \, dx$; $u = \tan 2x$

8) $\int 8\sec^2 4x \cdot \tan^4 4x \, dx$; $u = \tan 4x$

9) $\int -\frac{12\sec^2 -4x}{\tan^5 -4x} \, dx$; $u = \tan -4x$

10) $\int -\frac{12\sin 3x}{\cos^3 3x} \, dx$; $u = \cos 3x$

11) $\int \frac{15\csc^2 -5x}{\cot^5 -5x}\,dx;\ u = \cot -5x$

12) $\int \frac{15\sec 3x\tan 3x}{\sec^5 3x}\,dx;\ u = \sec 3x$

13) $\int \frac{10\sec 2x\tan 2x}{\sec^5 2x}\,dx;\ u = \sec 2x$

14) $\int \frac{16\cos 4x}{\sin^5 4x}\,dx;\ u = \sin 4x$

15) $\int -12\cos -3x \cdot (\sin -3x)^{\frac{2}{3}}\,dx;\ u = \sin -3x$

16) $\int -12\sin 4x\sqrt{\cos 4x}\,dx;\ u = \cos 4x$

17) $\int -20\csc 5x\cot 5x \cdot (\csc 5x)^{\frac{1}{5}}\,dx;\ u = \csc 5x$

18) $\int 20\sec 5x\tan 5x \cdot (\sec 5x)^{\frac{5}{6}}\,dx;\ u = \sec 5x$

19) $\int 9\cos 3x \cdot (\sin 3x)^{\frac{1}{2}}\,dx;\ u = \sin 3x$

20) $\int 9\sin -3x\sqrt[3]{\cos -3x}\,dx;\ u = \cos -3x$

Calculus Practice: Techniques for Finding Antiderivatives 4b

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 10\csc^2 -5x \cdot \cot^4 -5x \, dx;\ u = \cot -5x$

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

2) $\int -10\csc 5x\cot 5x \cdot \csc^3 5x \, dx;\ u = \csc 5x$

$\frac{1}{2} \cdot \csc^4 5x + C$

3) $\int 6\sin -2x \cdot \cos^4 -2x \, dx;\ u = \cos -2x$

$\frac{3}{5} \cdot \cos^5 -2x + C$

4) $\int -16\cos -4x \cdot \sin^4 -4x \, dx;\ u = \sin -4x$

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

5) $\int 20\cos 5x \cdot \sin^5 5x \, dx;\ u = \sin 5x$

$\frac{2}{3} \cdot \sin^6 5x + C$

6) $\int -15\csc^2 5x \cdot \cot^4 5x \, dx;\ u = \cot 5x$

$\frac{3}{5} \cdot \cot^5 5x + C$

7) $\int 10\sec^2 2x \cdot \tan^3 2x \, dx;\ u = \tan 2x$

$\frac{5}{4} \cdot \tan^4 2x + C$

8) $\int 8\sec^2 4x \cdot \tan^4 4x \, dx;\ u = \tan 4x$

$\frac{2}{5} \cdot \tan^5 4x + C$

9) $\int -\frac{12\sec^2 -4x}{\tan^5 -4x} \, dx;\ u = \tan -4x$

$-\frac{3}{4\tan^4 -4x} + C$

10) $\int -\frac{12\sin 3x}{\cos^3 3x} \, dx;\ u = \cos 3x$

$-\frac{2}{\cos^2 3x} + C$

11) $\int \frac{15\csc^2 -5x}{\cot^5 -5x}\, dx;\ u = \cot -5x$

$-\frac{3}{4\cot^4 -5x} + C$

12) $\int \frac{15\sec 3x\tan 3x}{\sec^5 3x}\, dx;\ u = \sec 3x$

$-\frac{5}{4\sec^4 3x} + C$

13) $\int \frac{10\sec 2x\tan 2x}{\sec^5 2x}\, dx;\ u = \sec 2x$

$-\frac{5}{4\sec^4 2x} + C$

14) $\int \frac{16\cos 4x}{\sin^5 4x}\, dx;\ u = \sin 4x$

$-\frac{1}{\sin^4 4x} + C$

15) $\int -12\cos -3x \cdot (\sin -3x)^{\frac{2}{3}}\, dx;\ u = \sin -3x$

$\frac{12}{5} \cdot (\sin -3x)^{\frac{5}{3}} + C$

16) $\int -12\sin 4x\sqrt{\cos 4x}\, dx;\ u = \cos 4x$

$2(\cos 4x)^{\frac{3}{2}} + C$

17) $\int -20\csc 5x\cot 5x \cdot (\csc 5x)^{\frac{1}{5}}\, dx;\ u = \csc 5x$

$\frac{10}{3} \cdot (\csc 5x)^{\frac{6}{5}} + C$

18) $\int 20\sec 5x\tan 5x \cdot (\sec 5x)^{\frac{5}{6}}\, dx;\ u = \sec 5x$

$\frac{24}{11} \cdot (\sec 5x)^{\frac{11}{6}} + C$

19) $\int 9\cos 3x \cdot (\sin 3x)^{\frac{1}{2}}\, dx;\ u = \sin 3x$

$2(\sin 3x)^{\frac{3}{2}} + C$

20) $\int 9\sin -3x\sqrt[3]{\cos -3x}\, dx;\ u = \cos -3x$

$\frac{9}{4} \cdot (\cos -3x)^{\frac{4}{3}} + C$