Calculus Practice: Techniques for Finding Antiderivatives 9b

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 125x^4\csc\left(5x^5+4\right)\cot\left(5x^5+4\right)\,dx;\ \ u=5x^5+4$

2) $\int 6x^2\sin\left(2x^3-1\right)\,dx;\ \ u=2x^3-1$

3) $\int -45x^4\sec^2\left(3x^5+1\right)\,dx;\ \ u=3x^5+1$

4) $\int 6x\csc^2\left(3x^2-1\right)\,dx;\ \ u=3x^2-1$

5) $\int -18x\cos\left(3x^2-1\right)\,dx;\ \ u=3x^2-1$

6) $\int 25x^4\csc\left(5x^5+2\right)\,dx;\ \ u=5x^5+2$

7) $\int 16x^3\csc\left(2x^4-5\right)\,dx;\ \ u=2x^4-5$

8) $\int -12x^3\sec\left(x^4+5\right)\,dx;\ \ u=x^4+5$

9) $\int 10x\csc\left(5x^2+4\right)\,dx;\ \ u=5x^2+4$

10) $\int -50x^4\csc\left(5x^5+2\right)dx;\ u=5x^5+2$

11) $\int \frac{16x}{\sin^2\left(2x^2-3\right)}dx;\ u=2x^2-3$

12) $\int -\frac{40x^3}{\csc\left(2x^4-5\right)}dx;\ u=2x^4-5$

13) $\int -\frac{4x}{\cos^2\left(x^2-3\right)}dx;\ u=x^2-3$

14) $\int \frac{15x^2\cos\left(5x^3-4\right)}{\sin^2\left(5x^3-4\right)}dx;\ u=5x^3-4$

15) $\int -\frac{15x^2}{\sin^2\left(5x^3+1\right)}dx;\ u=5x^3+1$

16) $\int -\frac{24x}{\cos\left(4x^2+3\right)}dx;\ u=4x^2+3$

17) $\int -\frac{75x^4}{\sin\left(5x^5+3\right)}dx;\ u=5x^5+3$

18) $\int \frac{40x^4\sin\left(2x^5+5\right)}{\cos\left(2x^5+5\right)}dx;\ u=2x^5+5$

19) $\int \frac{30x^2\sin\left(2x^3+1\right)}{\cos\left(2x^3+1\right)}dx;\ u=2x^3+1$

20) $\int -\frac{32x}{\sin\left(4x^2-3\right)}dx;\ u=4x^2-3$

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Evaluate each indefinite integral. Use the provided substitution.

1) $\int 125x^4\csc(5x^5+4)\cot(5x^5+4)\,dx;\ u=5x^5+4$

$-5\csc(5x^5+4)+C$

2) $\int 6x^2\sin(2x^3-1)\,dx;\ u=2x^3-1$

$-\cos(2x^3-1)+C$

3) $\int -45x^4\sec^2(3x^5+1)\,dx;\ u=3x^5+1$

$-3\tan(3x^5+1)+C$

4) $\int 6x\csc^2(3x^2-1)\,dx;\ u=3x^2-1$

$-\cot(3x^2-1)+C$

5) $\int -18x\cos(3x^2-1)\,dx;\ u=3x^2-1$

$-3\sin(3x^2-1)+C$

6) $\int 25x^4\csc(5x^5+2)\,dx;\ u=5x^5+2$

$\ln\left|\csc(5x^5+2)-\cot(5x^5+2)\right|+C$

7) $\int 16x^3\csc(2x^4-5)\,dx;\ u=2x^4-5$

$2\ln\left|\csc(2x^4-5)-\cot(2x^4-5)\right|+C$

8) $\int -12x^3\sec(x^4+5)\,dx;\ u=x^4+5$

$-3\ln\left|\sec(x^4+5)+\tan(x^4+5)\right|+C$

9) $\int 10x\csc(5x^2+4)\,dx;\ u=5x^2+4$

$\ln\left|\csc(5x^2+4)-\cot(5x^2+4)\right|+C$

10) $\int -50x^4\csc\left(5x^5+2\right)\,dx;\ u=5x^5+2$

$-2\ln\left|\csc\left(5x^5+2\right)-\cot\left(5x^5+2\right)\right|+C$

11) $\int \frac{16x}{\sin^2\left(2x^2-3\right)}\,dx;\ u=2x^2-3$

$-4\cot\left(2x^2-3\right)+C$

12) $\int -\frac{40x^3}{\csc\left(2x^4-5\right)}\,dx;\ u=2x^4-5$

$5\cos\left(2x^4-5\right)+C$

13) $\int -\frac{4x}{\cos^2\left(x^2-3\right)}\,dx;\ u=x^2-3$

$-2\tan\left(x^2-3\right)+C$

14) $\int \frac{15x^2\cos\left(5x^3-4\right)}{\sin^2\left(5x^3-4\right)}\,dx;\ u=5x^3-4$

$-\csc\left(5x^3-4\right)+C$

15) $\int -\frac{15x^2}{\sin^2\left(5x^3+1\right)}\,dx;\ u=5x^3+1$

$\cot\left(5x^3+1\right)+C$

16) $\int -\frac{24x}{\cos\left(4x^2+3\right)}\,dx;\ u=4x^2+3$

$-3\ln\left|\sec\left(4x^2+3\right)+\tan\left(4x^2+3\right)\right|+C$

17) $\int -\frac{75x^4}{\sin\left(5x^5+3\right)}\,dx;\ u=5x^5+3$

$-3\ln\left|\csc\left(5x^5+3\right)-\cot\left(5x^5+3\right)\right|+C$

18) $\int \frac{40x^4\sin\left(2x^5+5\right)}{\cos\left(2x^5+5\right)}\,dx;\ u=2x^5+5$

$4\ln\left|\sec\left(2x^5+5\right)\right|+C$

19) $\int \frac{30x^2\sin\left(2x^3+1\right)}{\cos\left(2x^3+1\right)}\,dx;\ u=2x^3+1$

$5\ln\left|\sec\left(2x^3+1\right)\right|+C$

20) $\int -\frac{32x}{\sin\left(4x^2-3\right)}\,dx;\ u=4x^2-3$

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