# Calculus Practice: Techniques for Finding Antiderivatives 9a

**Evaluate each indefinite integral. Use the provided substitution.**

1) $\int 16x\sec^2(4x^2+5)\,dx;\ u = 4x^2+5$

A) $2\tan(4x^2+5)+C$
B) $2\csc(4x^2+5)+C$
C) $2\cot(4x^2+5)+C$
D) $2\cos(4x^2+5)+C$

2) $\int -20x^4\sec^2(2x^5+1)\,dx;\ u = 2x^5+1$

A) $-2\cot(2x^5+1)+C$
B) $-2\csc(2x^5+1)+C$
C) $-2\sec(2x^5+1)+C$
D) $-2\tan(2x^5+1)+C$

3) $\int -100x^4\cos(4x^5+1)\,dx;\ u = 4x^5+1$

A) $-5\cos(4x^5+1)+C$
B) $-5\sin(4x^5+1)+C$
C) $-5\sec(4x^5+1)+C$
D) $-5\cot(4x^5+1)+C$

4) $\int 25x^4\csc(x^5-4)\cot(x^5-4)\,dx;\ u = x^5-4$

A) $-5\sin(x^5-4)+C$
B) $-5\sec(x^5-4)+C$
C) $-5\csc(x^5-4)+C$
D) $-5\cos(x^5-4)+C$

5) $\int 24x^3\cos(3x^4-1)\,dx;\ u = 3x^4-1$

A) $2\cos(3x^4-1)+C$
B) $2\csc(3x^4-1)+C$
C) $2\sin(3x^4-1)+C$
D) $2\tan(3x^4-1)+C$

6) $\int -10x^4\cot(x^5-3)\,dx;\ u = x^5-3$

A) $-2\csc(x^5-3)+C$
B) $-2\ln\left|\sin(x^5-3)\right|+C$
C) $-2\cos(x^5-3)+C$
D) $-2\ln\left|\csc(x^5-3)-\cot(x^5-3)\right|+C$

7) $\int 40x^3\cot(5x^4+1)\,dx;\ u = 5x^4+1$

A) $2\ln\left|\sin(5x^4+1)\right|+C$
B) $2\cot(5x^4+1)+C$
C) $2\sin(5x^4+1)+C$
D) $2\csc(5x^4+1)+C$

8) $\int -75x^4\csc(3x^5-2)\,dx;\ u = 3x^5-2$

A) $-5\ln\left|\csc(3x^5-2)-\cot(3x^5-2)\right|+C$
B) $-5\ln\left|\sin(3x^5-2)\right|+C$
C) $-5\sin(3x^5-2)+C$
D) $-5\sec(3x^5-2)+C$

9) $\int -60x^3\csc(5x^4-2)\,dx;\ u = 5x^4-2$

A) $-3\ln\left|\csc(5x^4-2)-\cot(5x^4-2)\right|+C$
B) $-3\cot(5x^4-2)+C$
C) $-3\sin(5x^4-2)+C$
D) $-3\ln\left|\sec(5x^4-2)+\tan(5x^4-2)\right|+C$

10) $\int -40x\cot(5x^2+1)\,dx;\ u = 5x^2+1$

A) $-4\ln\left|\sec(5x^2+1)\right|+C$
B) $-4\cot(5x^2+1)+C$
C) $-4\ln\left|\sin(5x^2+1)\right|+C$
D) $-4\tan(5x^2+1)+C$

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

A) $\sec\left(x^3-3\right)+C$
B) $\cot\left(x^3-3\right)+C$
C) $\tan\left(x^3-3\right)+C$
D) $\csc\left(x^3-3\right)+C$

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

A) $-5\csc\left(2x^4+5\right)+C$
B) $-5\sin\left(2x^4+5\right)+C$
C) $-5\sec\left(2x^4+5\right)+C$
D) $-5\cos\left(2x^4+5\right)+C$

13) $\int -\frac{100x^3}{\sec\left(5x^4-2\right)}\,dx;\ u=5x^4-2$

A) $-5\sin\left(5x^4-2\right)+C$
B) $-5\tan\left(5x^4-2\right)+C$
C) $-5\cot\left(5x^4-2\right)+C$
D) $-5\sec\left(5x^4-2\right)+C$

14) $\int -\frac{8x}{\cos^2\left(x^2+4\right)}\,dx;\ u=x^2+4$

A) $-4\tan\left(x^2+4\right)+C$
B) $-4\cot\left(x^2+4\right)+C$
C) $-4\sin\left(x^2+4\right)+C$
D) $-4\cos\left(x^2+4\right)+C$

15) $\int -\frac{36x^3}{\cos^2\left(3x^4-4\right)}\,dx;\ u=3x^4-4$

A) $-3\tan\left(3x^4-4\right)+C$
B) $-3\cot\left(3x^4-4\right)+C$
C) $-3\sec\left(3x^4-4\right)+C$
D) $-3\sin\left(3x^4-4\right)+C$

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

A) $-3\ln\left|\sec\left(4x^2+3\right)+\tan\left(4x^2+3\right)\right|+C$
B) $-3\ln\left|\sec\left(4x^2+3\right)\right|+C$
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B) $-3\sec\left(5x^5+3\right)+C$
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D) $-3\ln\left|\csc\left(5x^5+3\right)-\cot\left(5x^5+3\right)\right|+C$

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

A) $4\sec\left(2x^5+5\right)+C$
B) $4\sin\left(2x^5+5\right)+C$
C) $4\csc\left(2x^5+5\right)+C$
D) $4\ln\left|\sec\left(2x^5+5\right)\right|+C$

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

A) $5\sin\left(2x^3+1\right)+C$
B) $5\sec\left(2x^3+1\right)+C$
C) $5\csc\left(2x^3+1\right)+C$
D) $5\ln\left|\sec\left(2x^3+1\right)\right|+C$

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

A) $-4\ln\left|\sec\left(4x^2-3\right)+\tan\left(4x^2-3\right)\right|+C$
B) $-4\tan\left(4x^2-3\right)+C$
C) $-4\cot\left(4x^2-3\right)+C$
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C) $-5\sec(2x^4+5)+C$
D) $-5\cos(2x^4+5)+C$

13) $\int -\frac{100x^3}{\sec(5x^4-2)}\,dx;\ u = 5x^4 - 2$

*A) $-5\sin(5x^4-2)+C$
B) $-5\tan(5x^4-2)+C$
C) $-5\cot(5x^4-2)+C$
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C) $4\csc(2x^5+5)+C$
*D) $4\ln\left|\sec(2x^5+5)\right|+C$

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

A) $5\sin(2x^3+1)+C$
B) $5\sec(2x^3+1)+C$
C) $5\csc(2x^3+1)+C$
*D) $5\ln\left|\sec(2x^3+1)\right|+C$

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B) $-4\tan(4x^2-3)+C$
C) $-4\cot(4x^2-3)+C$
*D) $-4\ln\left|\csc(4x^2-3)-\cot(4x^2-3)\right|+C$