Calculus Practice: Techniques for Finding Antiderivatives 11a

Evaluate each indefinite integral. Use the provided substitution.

1) $\int 8e^{4x} \cdot \csc^2\left(e^{4x}+5\right)\,dx;\ u = e^{4x}+5$

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

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

A) $-\tan\left(e^{2x}-3\right)+C$
B) $-\csc\left(e^{2x}-3\right)+C$
C) $-\cos\left(e^{2x}-3\right)+C$
D) $-\sin\left(e^{2x}-3\right)+C$

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

A) $-3\cot\left(e^{5x}+1\right)+C$
B) $-3\tan\left(e^{5x}+1\right)+C$
C) $-3\cos\left(e^{5x}+1\right)+C$
D) $-3\csc\left(e^{5x}+1\right)+C$

4) $\int e^{x}\sin\left(e^{x}-1\right)\,dx;\ u = e^{x}-1$

A) $-\sec\left(e^{x}-1\right)+C$
B) $-\csc\left(e^{x}-1\right)+C$
C) $-\tan\left(e^{x}-1\right)+C$
D) $-\cos\left(e^{x}-1\right)+C$

5) $\int 4e^{x}\sin\left(e^{x}+5\right)\,dx;\ u = e^{x}+5$

A) $-4\csc\left(e^{x}+5\right)+C$
B) $-4\sec\left(e^{x}+5\right)+C$
C) $-4\cot\left(e^{x}+5\right)+C$
D) $-4\cos\left(e^{x}+5\right)+C$

6) $\int 8e^{2x}\tan\left(e^{2x}+4\right)\,dx;\ u = e^{2x}+4$

A) $4\tan\left(e^{2x}+4\right)+C$
B) $4\ln\left|\sec\left(e^{2x}+4\right)\right|+C$
C) $4\sec\left(e^{2x}+4\right)+C$
D) $4\cos\left(e^{2x}+4\right)+C$

7) $\int -8e^{2x}\sec\left(e^{2x}+2\right)\,dx;\ u = e^{2x}+2$

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

8) $\int 6e^{3x}\tan\left(e^{3x}-2\right)\,dx;\ u = e^{3x}-2$

A) $2\sec\left(e^{3x}-2\right)+C$
B) $2\tan\left(e^{3x}-2\right)+C$
C) $2\ln\left|\sec\left(e^{3x}-2\right)\right|+C$
D) $2\sin\left(e^{3x}-2\right)+C$

9) $\int 25e^{5x}\csc\left(e^{5x}+5\right)\,dx;\ u = e^{5x}+5$

A) $5\sec\left(e^{5x}+5\right)+C$
B) $5\ln\left|\csc\left(e^{5x}+5\right)-\cot\left(e^{5x}+5\right)\right|+C$
C) $5\tan\left(e^{5x}+5\right)+C$
D) $5\cos\left(e^{5x}+5\right)+C$

10) $\int 6e^{2x}\csc\left(e^{2x}-5\right)\,dx;\ u = e^{2x}-5$

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

11) $\int -\frac{10e^{2x}\sin\left(e^{2x}-3\right)}{\cos^2\left(e^{2x}-3\right)}\,dx;\ u = e^{2x}-3$

A) $-5\csc\left(e^{2x}-3\right)+C$
B) $-5\sec\left(e^{2x}-3\right)+C$
C) $-5\tan\left(e^{2x}-3\right)+C$
D) $-5\sin\left(e^{2x}-3\right)+C$

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

A) $2\cos\left(e^{2x}-2\right)+C$
B) $2\sec\left(e^{2x}-2\right)+C$
C) $2\cot\left(e^{2x}-2\right)+C$
D) $2\sin\left(e^{2x}-2\right)+C$

13) $\int -\frac{5e^{5x}}{\csc\left(e^{5x}-1\right)}\,dx;\ u = e^{5x}-1$

A) $\cos\left(e^{5x}-1\right)+C$
B) $\tan\left(e^{5x}-1\right)+C$
C) $\sec\left(e^{5x}-1\right)+C$
D) $\cot\left(e^{5x}-1\right)+C$

14) $\int \frac{20e^{4x}\cos\left(e^{4x}+5\right)}{\sin^2\left(e^{4x}+5\right)}\,dx;\ u = e^{4x}+5$

A) $-5\sec\left(e^{4x}+5\right)+C$
B) $-5\tan\left(e^{4x}+5\right)+C$
C) $-5\csc\left(e^{4x}+5\right)+C$
D) $-5\cot\left(e^{4x}+5\right)+C$

15) $\int -\frac{12e^{4x}}{\sec\left(e^{4x}-3\right)}\,dx;\ u = e^{4x}-3$

A) $-3\sin\left(e^{4x}-3\right)+C$
B) $-3\csc\left(e^{4x}-3\right)+C$
C) $-3\sec\left(e^{4x}-3\right)+C$
D) $-3\tan\left(e^{4x}-3\right)+C$

16) $\int \frac{20e^{5x}\cos\left(e^{5x}-2\right)}{\sin\left(e^{5x}-2\right)}\,dx;\ u = e^{5x}-2$

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

17) $\int -\frac{3e^{x}}{\cos\left(e^{x}-1\right)}\,dx;\ u = e^{x}-1$

A) $-3\ln\left|\sec\left(e^{x}-1\right)+\tan\left(e^{x}-1\right)\right|+C$
B) $-3\cos\left(e^{x}-1\right)+C$
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18) $\int \frac{5e^{x}}{\cos\left(e^{x}+3\right)}\,dx;\ u = e^{x}+3$

A) $5\ln\left|\sec\left(e^{x}+3\right)\right|+C$
B) $5\sec\left(e^{x}+3\right)+C$
C) $5\tan\left(e^{x}+3\right)+C$
D) $5\ln\left|\sec\left(e^{x}+3\right)+\tan\left(e^{x}+3\right)\right|+C$

19) $\int \frac{15e^{5x}}{\cos\left(e^{5x}-1\right)}\,dx;\ u = e^{5x}-1$

A) $3\ln\left|\sec\left(e^{5x}-1\right)+\tan\left(e^{5x}-1\right)\right|+C$
B) $3\sin\left(e^{5x}-1\right)+C$
C) $3\cot\left(e^{5x}-1\right)+C$
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20) $\int -\frac{15e^{5x}}{\cos\left(e^{5x}+1\right)}\,dx;\ u = e^{5x}+1$

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B) $-3\ln\left|\csc\left(e^{5x}+1\right)-\cot\left(e^{5x}+1\right)\right|+C$
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