Calculus Practice: Techniques for Finding Antiderivatives 7b

Evaluate each indefinite integral. Use the provided substitution.

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

2) $\int -\frac{2e^{x}}{e^{x}+3}\,dx;\ u = e^{x} + 3$

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

4) $\int e^{3x} \cdot -9e^{e^{3x}+5}\,dx;\ u = e^{3x} + 5$

5) $\int e^{x} \cdot -4e^{e^{x}+1}\,dx;\ u = e^{x} + 1$

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

7) $\int -\frac{12e^{4x}}{e^{4x}+5}\,dx;\ u = e^{4x} + 5$

8) $\int e^{5x} \cdot 15e^{e^{5x}-3}\,dx;\ u = e^{5x} - 3$

9) $\int e^{5x} \cdot -20 \cdot 2^{e^{5x}+5}\,dx;\ u = e^{5x} + 5$

10) $\int e^{5x} \cdot -20e^{e^{5x}+4}\,dx;\ u = e^{5x} + 4$

11) $\int e^{x} \cdot 2 \cdot 5^{e^{x}+4}\,dx;\ u = e^{x} + 4$

12) $\int e^{5x} \cdot -20 \cdot 2^{e^{5x}-1}\,dx;\ u = e^{5x} - 1$

13) $\int e^{2x} \cdot -8e^{e^{2x}+3}\,dx;\ u = e^{2x} + 3$

14) $\int e^{3x} \cdot 6e^{e^{3x}-2}\,dx;\ u = e^{3x} - 2$

15) $\int e^{x} \cdot -2 \cdot 4^{e^{x}+4}\,dx;\ u = e^{x} + 4$

16) $\int e^{4x} \cdot 12 \cdot 5^{e^{4x}-3}\,dx;\ u = e^{4x} - 3$

17) $\int -\frac{e^{x}}{e^{x}+1}\,dx;\ u = e^{x} + 1$

18) $\int e^{3x} \cdot 9e^{e^{3x}-4}\,dx;\ u = e^{3x} - 4$

19) $\int e^{4x} \cdot -12 \cdot 2^{e^{4x}-1}\,dx;\ u = e^{4x} - 1$

20) $\int -\frac{4e^{2x}}{e^{2x}+3}\,dx;\ u = e^{2x} + 3$

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Evaluate each indefinite integral. Use the provided substitution.

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

$-3\ln\left|e^{2x}-2\right| + C$

2) $\int -\frac{2e^{x}}{e^{x}+3}\,dx;\ u = e^{x}+3$

$-2\ln\left(e^{x}+3\right) + C$

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

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

4) $\int e^{3x}\cdot -9e^{e^{3x}+5}\,dx;\ u = e^{3x}+5$

$-3e^{e^{3x}+5} + C$

5) $\int e^{x}\cdot -4e^{e^{x}+1}\,dx;\ u = e^{x}+1$

$-4e^{e^{x}+1} + C$

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

$-e^{e^{2x}-5} + C$

7) $\int -\frac{12e^{4x}}{e^{4x}+5}\,dx;\ u = e^{4x}+5$

$-3\ln\left(e^{4x}+5\right) + C$

8) $\int e^{5x}\cdot 15e^{e^{5x}-3}\,dx;\ u = e^{5x}-3$

$3e^{e^{5x}-3} + C$

9) $\int e^{5x}\cdot -20\cdot 2^{e^{5x}+5}\,dx;\ u = e^{5x}+5$

$-\frac{4\cdot 2^{e^{5x}+5}}{\ln 2} + C$

10) $\int e^{5x}\cdot -20e^{e^{5x}+4}\,dx;\ u = e^{5x}+4$

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

11) $\int e^x \cdot 2 \cdot 5^{e^x + 4}\, dx;\ u = e^x + 4$

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

12) $\int e^{5x} \cdot -20 \cdot 2^{e^{5x} - 1}\, dx;\ u = e^{5x} - 1$

$-\frac{4 \cdot 2^{e^{5x} - 1}}{\ln 2} + C$

13) $\int e^{2x} \cdot -8e^{e^{2x} + 3}\, dx;\ u = e^{2x} + 3$

$-4e^{e^{2x} + 3} + C$

14) $\int e^{3x} \cdot 6e^{e^{3x} - 2}\, dx;\ u = e^{3x} - 2$

$2e^{e^{3x} - 2} + C$

15) $\int e^x \cdot -2 \cdot 4^{e^x + 4}\, dx;\ u = e^x + 4$

$-\frac{2 \cdot 4^{e^x + 4}}{\ln 4} + C$

16) $\int e^{4x} \cdot 12 \cdot 5^{e^{4x} - 3}\, dx;\ u = e^{4x} - 3$

$\frac{3 \cdot 5^{e^{4x} - 3}}{\ln 5} + C$

17) $\int -\frac{e^x}{e^x + 1}\, dx;\ u = e^x + 1$

$-\ln\left(e^x + 1\right) + C$

18) $\int e^{3x} \cdot 9e^{e^{3x} - 4}\, dx;\ u = e^{3x} - 4$

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

19) $\int e^{4x} \cdot -12 \cdot 2^{e^{4x} - 1}\, dx;\ u = e^{4x} - 1$

$-\frac{3 \cdot 2^{e^{4x} - 1}}{\ln 2} + C$

20) $\int -\frac{4e^{2x}}{e^{2x} + 3}\, dx;\ u = e^{2x} + 3$

$-2\ln\left(e^{2x} + 3\right) + C$