Calculus Practice: Techniques for Finding Antiderivatives 2a

Evaluate each indefinite integral. Use the provided substitution.

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

A) $\frac{3}{4}(2 + \ln -3x)^4 + C$

B) $\frac{4}{5}(2 + \ln -3x)^5 + C$

C) $\frac{1}{2}(2 + \ln -3x)^6 + C$

D) $\frac{5}{6}(2 + \ln -3x)^6 + C$

2) $\int \frac{4(-4 + \ln -2x)^4}{x}\,dx;\ u = -4 + \ln -2x$

A) $(-4 + \ln -2x)^4 + C$

B) $\frac{3}{5}(-4 + \ln -2x)^5 + C$

C) $(-4 + \ln -2x)^5 + C$

D) $\frac{4}{5}(-4 + \ln -2x)^5 + C$

3) $\int \frac{3(4 + \ln 5x)^5}{x}\,dx;\ u = 4 + \ln 5x$

A) $\frac{2}{3}(4 + \ln 5x)^6 + C$

B) $\frac{4}{5}(4 + \ln 5x)^5 + C$

C) $\frac{5}{6}(4 + \ln 5x)^6 + C$

D) $\frac{1}{2}(4 + \ln 5x)^6 + C$

4) $\int \frac{3(-5 + \ln 4x)^3}{x}\,dx;\ u = -5 + \ln 4x$

A) $\frac{3}{5}(-5 + \ln 4x)^5 + C$

B) $\frac{4}{5}(-5 + \ln 4x)^5 + C$

C) $\frac{3}{4}(-5 + \ln 4x)^4 + C$

D) $\frac{5}{6}(-5 + \ln 4x)^6 + C$

5) $\int \frac{4(1 + \ln -3x)^{-4}}{x}\,dx;\ u = 1 + \ln -3x$

A) $-\frac{2}{3(1 + \ln -3x)^3} + C$

B) $-\frac{4}{3(1 + \ln -3x)^3} + C$

C) $-\frac{5}{2(1 + \ln -3x)^2} + C$

D) $-\frac{2}{(1 + \ln -3x)^2} + C$

6) $\int \frac{3}{x(-3 + \ln x)^5}\,dx;\ u = -3 + \ln x$

A) $-\frac{3}{4(-3 + \ln x)^4} + C$

B) $-\frac{1}{2(-3 + \ln x)^4} + C$

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

D) $-\frac{1}{(-3 + \ln x)^4} + C$

7) $\int \frac{2}{x(4 + \ln -4x)^5}\,dx;\ u = 4 + \ln -4x$

A) $-\frac{1}{(4 + \ln -4x)^3} + C$

B) $-\frac{1}{2(4 + \ln -4x)^4} + C$

C) $-\frac{2}{(4 + \ln -4x)^2} + C$

D) $-\frac{3}{4(4 + \ln -4x)^4} + C$

8) $\int \frac{4(-2 + \ln 2x)^{-3}}{x}\,dx;\ u = -2 + \ln 2x$

A) $-\frac{2}{(-2 + \ln 2x)^2} + C$

B) $-\frac{1}{(-2 + \ln 2x)^4} + C$

C) $-\frac{5}{3(-2 + \ln 2x)^3} + C$

D) $-\frac{5}{4(-2 + \ln 2x)^4} + C$

9) $\int \frac{2\sqrt{-1 + \ln 3x}}{x}\,dx;\ u = -1 + \ln 3x$

A) $\frac{15}{4}(-1 + \ln 3x)^{\frac{4}{3}} + C$

B) $\frac{4}{3}(-1 + \ln 3x)^{\frac{3}{2}} + C$

C) $\frac{9}{4}(-1 + \ln 3x)^{\frac{4}{3}} + C$

D) $\frac{8}{3}(-1 + \ln 3x)^{\frac{3}{2}} + C$

10) $\int \frac{2(2 + \ln -2x)^{\frac{1}{2}}}{x}\,dx;\ u = 2 + \ln -2x$

A) $\frac{8}{5}(2 + \ln -2x)^{\frac{5}{2}} + C$

B) $\frac{10}{3}(2 + \ln -2x)^{\frac{3}{2}} + C$

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

D) $\frac{4}{3}(2 + \ln -2x)^{\frac{3}{2}} + C$

11) $\int \frac{4\sqrt{4 + \ln 3x}}{x}\,dx;\ u = 4 + \ln 3x$

A) $\frac{8}{3}(4 + \ln 3x)^{\frac{3}{2}} + C$

B) $\frac{10}{3}(4 + \ln 3x)^{\frac{3}{2}} + C$

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

D) $\frac{15}{4}(4 + \ln 3x)^{\frac{4}{3}} + C$

12) $\int \frac{4\sqrt{2 + \ln -3x}}{x}\,dx;\ u = 2 + \ln -3x$

A) $\frac{9}{4}(2 + \ln -3x)^{\frac{4}{3}} + C$

B) $\frac{15}{4}(2 + \ln -3x)^{\frac{4}{3}} + C$

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

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7) $\int \frac{2}{x(4+\ln -4x)^5}\,dx;\ u = 4+\ln -4x$

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*B) $-\frac{1}{2(4+\ln -4x)^4}+C$

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