Kuta Software - Infinite Calculus Name_____

Integration by Substitution

Date_____ Period____

Evaluate each indefinite integral. Use the provided substitution.

1) $\int \frac{20x^3}{\sqrt{25 - 25x^8}}\,dx;\ u = 5x^4$

2) $\int \frac{10x^4}{9 + 4x^{10}}\,dx;\ u = 2x^5$

3) $\int -\frac{2 \cdot \csc^2 2x}{\cot(2x) \cdot \sqrt{\cot^2 2x - 1}}\,dx;\ u = \cot 2x$

4) $\int \frac{1}{x\sqrt{25 - (\ln -2x)^2}}\,dx;\ u = \ln -2x$

Evaluate each indefinite integral.

5) $\int \frac{8x}{\sqrt{9 - 16x^4}}\,dx$

6) $\int \frac{3x^2}{x^3\sqrt{x^6 - 1}}\,dx$

7) $\int \frac{10x}{16 + 25x^4}\,dx$

8) $\int -\frac{4\sin 4x}{\sqrt{9 - \cos^2 4x}}\,dx$

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1) $\int \frac{20x^3}{\sqrt{25 - 25x^8}}\,dx;\ u = 5x^4$

$\sin^{-1} \frac{5x^4}{5} + C$

2) $\int \frac{10x^4}{9 + 4x^{10}}\,dx;\ u = 2x^5$

$\frac{1}{3} \cdot \tan^{-1} \frac{2x^5}{3} + C$

3) $\int -\frac{2 \cdot \csc^2 2x}{\cot(2x) \cdot \sqrt{\cot^2 2x - 1}}\,dx;\ u = \cot 2x$

$\sec^{-1} \left|\cot 2x\right| + C$

4) $\int \frac{1}{x\sqrt{25 - (\ln -2x)^2}}\,dx;\ u = \ln -2x$

$\sin^{-1} \frac{\ln -2x}{5} + C$

Evaluate each indefinite integral.

5) $\int \frac{8x}{\sqrt{9 - 16x^4}}\,dx$

$\sin^{-1} \frac{4x^2}{3} + C$

6) $\int \frac{3x^2}{x^3\sqrt{x^6 - 1}}\,dx$

$\sec^{-1} \left|x^3\right| + C$

7) $\int \frac{10x}{16 + 25x^4}\,dx$

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

8) $\int -\frac{4\sin 4x}{\sqrt{9 - \cos^2 4x}}\,dx$

$\sin^{-1} \frac{\cos 4x}{3} + C$