

Name : _____

Score : _____

Teacher : _____

Date : _____

Integration by Substitution

Find each indefinite integral using the substitution provided.

1) $\int \left(\frac{10}{x(9 + \ln 2x)} \right) dx$

$$u = 9 + \ln 2x$$

2) $\int \left(\frac{-12x - 80x^3}{3x^2 + 10x^4} \right) dx$

$$u = 3x^2 + 10x^4$$

3) $\int \left(\frac{96x + 40x^4}{6x^2 + x^5} \right) dx$

$$u = 6x^2 + x^5$$

4) $\int \left(\frac{50e^{10x}}{e^{10x} + 2} \right) dx$

$$u = e^{10x} + 2$$

5) $\int \left(\frac{-18x - 10}{9x^2 + 10x} \right) dx$

$$u = 9x^2 + 10x$$

6) $\int \left(\frac{1}{x(7 + \ln 8x)} \right) dx$

$$u = 7 + \ln 8x$$

7) $\int \left(\frac{4}{x(9 + \ln 7x)} \right) dx$

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$$9) \int \left(\frac{3}{x(6 + \ln 4x)} \right) dx$$

$$u = 6 + \ln 4x$$

$$10) \int \left(\frac{24x^2 + 4x}{8x^3 + 2x^2} \right) dx$$

$$u = 8x^3 + 2x^2$$

$$11) \int \left(\frac{90e^{9x}}{e^{9x} + 3} \right) dx$$

$$u = e^{9x} + 3$$

$$12) \int \left(\frac{27 + 120x^4}{9x + 8x^5} \right) dx$$

$$u = 9x + 8x^5$$

$$13) \int \left(\frac{140x^3 + 25x^4}{7x^4 + x^5} \right) dx$$

$$u = 7x^4 + x^5$$

$$14) \int \left(\frac{16e^{8x}}{e^{8x} + 9} \right) dx$$

$$u = e^{8x} + 9$$

$$15) \int \left(\frac{21x^2 + 56}{x^3 + 8x} \right) dx$$

$$u = x^3 + 8x$$

$$16) \int \left(\frac{-128x^3 - 36}{8x^4 + 9x} \right) dx$$

$$u = 8x^4 + 9x$$



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$$10 \ln | 9 + \ln 2x | + C$$

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3) $\int \left(\frac{96x + 40x^4}{6x^2 + x^5} \right) dx$

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