

Name : \_\_\_\_\_

Score : \_\_\_\_\_

Teacher : \_\_\_\_\_

Date : \_\_\_\_\_

## Integration by Substitution

Find each indefinite integral.

$$1) \int \left( \frac{36 + 8x}{9x + x^2} \right) dx$$

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

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

$$4) \int \left( \frac{7}{x(6 + \ln 3x)} \right) dx$$

$$5) \int \left( \frac{56e^{8x}}{e^{8x} + 5} \right) dx$$

$$6) \int \left( \frac{8e^{8x}}{e^{8x} + 5} \right) dx$$

$$7) \int \left( \frac{-2 - 48x^3}{x + 6x^4} \right) dx$$

$$8) \int \left( \frac{-5x^4 - 8}{x^5 + 8x} \right) dx$$



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## Integration by Substitution

Find each indefinite integral.

$$9) \int \left( \frac{2e^{2x}}{e^{2x} + 4} \right) dx$$

$$10) \int \left( \frac{21e^{7x}}{e^{7x} + 4} \right) dx$$

$$11) \int \left( \frac{36e^{4x}}{e^{4x} + 6} \right) dx$$

$$12) \int \left( \frac{35 + 168x^2}{5x + 8x^3} \right) dx$$

$$13) \int \left( \frac{-45x^4 - 24x^2}{9x^5 + 8x^3} \right) dx$$

$$14) \int \left( \frac{3 + 10x}{3x + 5x^2} \right) dx$$

$$15) \int \left( \frac{32e^{4x}}{e^{4x} + 10} \right) dx$$

$$16) \int \left( \frac{21 + 48x^3}{7x + 4x^4} \right) dx$$



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## Integration by Substitution

Find each indefinite integral.

1)  $\int \left( \frac{36 + 8x}{9x + x^2} \right) dx$

$$4 \ln | 9x + x^2 | + C$$

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

$$\ln | 4x^2 + 2x^4 | + C$$

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

$$9 \ln | 3 + \ln 4x | + C$$

4)  $\int \left( \frac{7}{x(6 + \ln 3x)} \right) dx$

$$7 \ln | 6 + \ln 3x | + C$$

5)  $\int \left( \frac{56e^{8x}}{e^{8x} + 5} \right) dx$

$$7 \ln | e^{8x} + 5 | + C$$

6)  $\int \left( \frac{8e^{8x}}{e^{8x} + 5} \right) dx$

$$\ln | e^{8x} + 5 | + C$$

7)  $\int \left( \frac{-2 - 48x^3}{x + 6x^4} \right) dx$

$$-2 \ln | x + 6x^4 | + C$$

8)  $\int \left( \frac{-5x^4 - 8}{x^5 + 8x} \right) dx$

$$-\ln | x^5 + 8x | + C$$



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Find each indefinite integral.

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

$$\ln|e^{2x} + 4| + C$$

10)  $\int \left( \frac{21e^{7x}}{e^{7x} + 4} \right) dx$

$$3\ln|e^{7x} + 4| + C$$

11)  $\int \left( \frac{36e^{4x}}{e^{4x} + 6} \right) dx$

$$9\ln|e^{4x} + 6| + C$$

12)  $\int \left( \frac{35 + 168x^2}{5x + 8x^3} \right) dx$

$$7\ln|5x + 8x^3| + C$$

13)  $\int \left( \frac{-45x^4 - 24x^2}{9x^5 + 8x^3} \right) dx$

$$-\ln|9x^5 + 8x^3| + C$$

14)  $\int \left( \frac{3 + 10x}{3x + 5x^2} \right) dx$

$$\ln|3x + 5x^2| + C$$

15)  $\int \left( \frac{32e^{4x}}{e^{4x} + 10} \right) dx$

$$8\ln|e^{4x} + 10| + C$$

16)  $\int \left( \frac{21 + 48x^3}{7x + 4x^4} \right) dx$

$$3\ln|7x + 4x^4| + C$$

