

Assignment : Integration by substitution

Evaluate each indefinite integral.

1) $\int \frac{-5x^3 - 8}{x^5} dx$

2) $\int \frac{-5x^3 - 16}{x^5} dx$

3) $\int (3x^4 - 5)^3 \cdot 12x^3 dx$

4) $\int (x^2 + 5)^3 \cdot 2x dx$

5) $\int \frac{(-5 + \ln 5x)^5}{x} dx$

6) $\int 3e^{3x} \cdot (e^{3x} - 3)^4 dx$

7) $\int 5 \sec 5x \tan 5x \cdot \sec^3 5x dx$

8) $\int -2 \csc^2 2x \cdot \cot^4 2x dx$

9) $\int \frac{50x}{5x^2 - 3} dx$

10) $\int -\frac{15x^2}{x^3 + 4} dx$

Evaluate each indefinite integral. Use the provided substitution.

11) $\int 100x^4 \sec^2(4x^5 - 5) dx; u = 4x^5 - 5$

12) $\int -15x^4 \cos(3x^5 + 1) dx; u = 3x^5 + 1$

Answers to Assignment : Integration by substitution

$$1) \frac{5}{x} + \frac{2}{x^4} + C$$

$$2) \frac{5}{x} + \frac{4}{x^4} + C$$

$$3) \frac{1}{4}(3x^4 - 5)^4 + C$$

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

$$5) \frac{1}{6}(-5 + \ln 5x)^6 + C$$

$$6) \frac{1}{5}(e^{3x} - 3)^5 + C$$

$$7) \frac{1}{4} \cdot \sec^4 5x + C$$

$$8) \frac{1}{5} \cdot \cot^5 2x + C$$

$$9) 5 \ln |5x^2 - 3| + C$$

$$10) -5 \ln |x^3 + 4| + C$$

$$11) 5 \tan (4x^5 - 5) + C$$

$$12) -\sin (3x^5 + 1) + C$$

