

5.2 Integration by Substitution.

Find the integral.

1) $\int (-x^8 + 4)^6 x^7 dx$ 1) _____

A) $-56(-x^8 + 4)^7 + C$

B) $-\frac{1}{7}(-x^8 + 4)^7 + \frac{1}{8}x^8 + C$

C) $-\frac{1}{56}(-x^8 + 4)^7 + C$

D) $-\frac{8}{7}(-x^8 + 4)^7 + C$

2) $\int e^{7x+4} dx$ 2) _____

A) $(7x + 4)e^{7x+4} + C$

B) $7e^{7x+4} + C$

C) $\frac{1}{7}e^{7x+4} + C$

D) $e^{7x} + C$

3) $\int \frac{1}{3-2x} dx$ 3) _____

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

B) $\frac{1}{2} \ln|3-2x| + C$

C) $2 \ln|3-2x| + C$

D) $-2 \ln|3-2x| + C$

4) $\int t e^{-7t^2} dt$ 4) _____

A) $-\frac{1}{7}e^{-7t^2} + C$

B) $\frac{1}{7}e^{-7t^2} + C$

C) $-\frac{1}{14}e^{-7t^2} + C$

D) $\frac{1}{14}e^{-7t^2} + C$

5) $\int \frac{5x^4 dx}{(10+x^5)^4}$

6) $\int x^2 \sqrt{x^3 + 10} dx$

7) $\int \frac{4x+1}{4x^2+2x+3} dx$

Solve the problem.

8) The rate of expenditure for maintenance of a particular machine is given by $M'(x) = 12x\sqrt{x^2 + 5}$, where x is time measured in years. Total maintenance costs through the second year are \$105. Find the total maintenance function. 8) _____

A) $M(x) = 12(x^2 + 5)^{3/2} - 3$

B) $M(x) = 4(x^2 + 5)^{3/2} - 3$

C) $M(x) = 4(x^2 + 5)^{3/2} - 93$

D) $M(x) = 12(x^2 + 5)^{3/2} - 93$

Answer Key

Testname: PRACTICE07

1) C

2) C

3) A

4) C

$$5) -\frac{1}{3(10+x^5)^3} + C$$

$$6) \frac{2}{9}(x^3+10)^{3/2} + C$$

$$7) \frac{1}{2} \ln |4x^2 + 2x + 3| + C$$

8) B