

Broward College

Find the integral.

1) $\int (3x^8 - 7x^3 + 6) dx$ 1) _____

A) $9x^9 - \frac{7}{4}x^4 + 6x + C$

B) $\frac{1}{3}x^9 - \frac{7}{4}x^4 + 6x + C$

C) $\frac{1}{3}x^9 - \frac{7}{3}x^4 + 6x + C$

D) $9x^9 - \frac{7}{3}x^4 + 6x + C$

2) $\int 13x^{-7} dx$ 2) _____

A) $\left(\frac{78}{x}\right)^6 + C$

B) $-\frac{13}{6}x^{-6} + C$

C) $\left(\frac{13}{6x}\right)^8 + C$

D) $-91x^{-8} + C$

3) $\int 12x^3 \sqrt{x} dx$ 3) _____

A) $\frac{11}{5}x^{9/2} + C$

B) $\frac{24}{7}x^{9/2} + C$

C) $\frac{8}{3}x^{9/2} + C$

D) $\frac{2}{9}x^{9/2} + C$

4) $\int 3 dx$ 4) _____

A) $3 + C$

B) $\frac{3}{2}x^2 + C$

C) $3x + C$

D) 0

5) $\int 9e^{0.2x} dx$ 5) _____

A) $45e^{0.2x} + C$

B) $\frac{9e^{0.2x} + 1}{0.2x + 1} + C$

C) $9e^{0.2x} + C$

D) $18e^{0.2x} + C$

6) $\int \left[5e^x - \frac{1}{x}\right] dx$ 6) _____

A) $5e^x - \frac{2}{x^2} + C$

B) $5xe^x - \ln|x| + C$

C) $5e^x - \ln|x| + C$

D) $5e^x - \frac{1}{2x^2} + C$

Provide an appropriate response.

7) Find $f(x)$ if $f'(x) = \frac{7}{x^4}$ and $f(1) = 4$. 7) _____

A) $-\frac{7}{3}x^{-3} - 3$

B) $-28x^{-5} - 3$

C) $-28x^{-5} + 32$

D) $f(x) = -\frac{7}{3}x^{-3} + \frac{19}{3}$

- 8) Find $f(x)$ if $f'(x) = \frac{3}{x^5}$ and $f\left(\frac{1}{2}\right) = 1$. 8) _____
- A) $-\frac{3}{4}x^{-4} + 13$ B) $-\frac{4}{5}x^{-4} + 13$ C) $-\frac{3}{4}x^{-4} + C$ D) $-\frac{3}{4}x^{-4} + \frac{5}{4}$

Solve the problem.

- 9) Find the cost function if the marginal cost function is $C'(x) = 10x - 6$ and the fixed cost is \$14. 9) _____
- A) $C(x) = 10x^2 - 6x + 13$ B) $C(x) = 5x^2 - 6x + 14$
 C) $C(x) = 10x^2 - 6x + 14$ D) $C(x) = 5x^2 - 6x + 13$

- 10) A company finds that consumer demand quantity changes with respect to price at a rate given by $D'(p) = -\frac{2,000}{p^2}$. Find the demand function if the company knows that 842 units of the product are demanded when the price is \$5 per unit. 10) _____
- A) $D(p) = \frac{2,000}{p} + 442$ B) $D(p) = \frac{4,000}{p} + 842$
 C) $D(p) = \frac{2,000}{p^3} + 442$ D) $D(p) = \frac{2,000}{p} + 842$

- 11) The marginal revenue from the sale of compact discs is given by $R'(x) = 190 - 8x$ and $R(0) = 0$, where $R(x)$ is the revenue in dollars. Find the price-demand equation. 11) _____
- A) $p = 190x - 8x^2$ B) $p = 190x - 8$ C) $p = 190x - 4x^2$ D) $p = 190 - 4x$

- 12) A computer manufacturer has found that its expenditure rate per day (in hundreds of dollars) on a certain type of job is given by $C'(x) = 10x + 6$, where x is the number of days since the start of the job. Find the expenditure if the job takes 8 days. 12) _____
- A) \$86 B) \$36,800 C) \$8600 D) \$368

- 13) An rock's acceleration at time t is given by $a(t) = 16t$, and its initial velocity is 35. Find the velocity function $v(t)$. 13) _____
- A) $v(t) = 8t^2 + 35$ B) $v(t) = 35t^2 + 16$ C) $v(t) = 16t^2 + 35$ D) $v(t) = 8t^2 + 35t$

Find the integral.

- 14) $\int (-x^8 + 4)^6 x^7 dx$ 14) _____
- A) $-\frac{8}{7}(-x^8 + 4)^7 + C$ B) $-\frac{1}{7}(-x^8 + 4)^7 + \frac{1}{8}x^8 + C$
 C) $-56(-x^8 + 4)^7 + C$ D) $-\frac{1}{56}(-x^8 + 4)^7 + C$

- 15) $\int e^{7x+4} dx$ 15) _____
- A) $7e^{7x+4} + C$ B) $(7x + 4)e^{7x+4} + C$
 C) $\frac{1}{7}e^{7x+4} + C$ D) $e^{7x} + C$

16) $\int \frac{1}{3-2x} dx$ 16) _____

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

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

17) $\int \frac{5x^4 dx}{(10+x^5)^4}$ 17) _____

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

C) $\frac{1}{5} (10+x^5)^5 + C$ D) $-\frac{5x^4}{(10+x^5)^3} + C$

18) $\int \frac{t^2}{\sqrt[3]{6+t^3}} dt$ 18) _____

A) $\frac{1}{2} t^3 (6+t^3)^{2/3} + C$ B) $\frac{1}{2} (6+t^3)^{2/3} + C$

C) $\frac{1}{6(6+t^3)^2} + C$ D) $\frac{1}{4} (6+t^3)^{2/3} + C$

19) $\int x^2 \sqrt{x^3+10} dx$ 19) _____

A) $-\frac{2}{3} (x^3+10)^{-1/2} + C$ B) $\frac{2}{3} (x^3+10)^{3/2} + C$

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

Evaluate the integral.

20) $\int_{-1}^1 (3x^2 - 8x) dx$ 20) _____

A) -7 B) 7 C) 12 D) 2

21) $\int_3^{16} 3\sqrt{x} dx$ 21) _____

A) 192 B) 24 C) 128 D) 288

22) $\int_0^b 9x^8 dx$ 22) _____

A) b^7 B) $\frac{1}{9} b^9$ C) b^9 D) $9b^9$

23) $\int_1^e \left(16x - \frac{5}{x} \right) dx$ 23) _____

(Express your answer in terms for e.)

- A) $8e^2 - 13$ B) $16e^2 - 5$ C) $8e^2 - 5$ D) $8e^2 - 8$

24) $\int_{0.1}^{0.4} 5e^{2x} dx$ 24) _____

(Round to three decimal places.)

- A) 0.967 B) 2.510 C) 0.425 D) 5.021

Solve the problem.

25) A factory discharges pollutants into a large river at a rate that is estimated by a water quality control agency to be $P'(t) = t\sqrt{1+t^2}$ for $0 \leq t \leq 5$, where $P(t)$ is the total number of tons of pollutants discharged into the river after t years of operation. What quantity of pollutants will be discharged into the river from the end of the third year to the end of the fifth year? (Round to two decimal places.) 25) _____

control agency to be $P'(t) = t\sqrt{1+t^2}$ for $0 \leq t \leq 5$, where $P(t)$ is the total number of tons of pollutants discharged into the river after t years of operation. What quantity of pollutants will be discharged into the river from the end of the third year to the end of the fifth year? (Round to two decimal places.)

- A) 32.67 tons B) 33.65 tons C) 75.71 tons D) 50.67 tons

Evaluate the integral.

26) $\int_{-3}^{-1} (x^2 + x + 2) dx$ 26) _____

- A) 12.33 B) 9.17 C) 8.5 D) 8.67

27) $\int_1^3 (2x^3 - 9x^{-2}) dx$ 27) _____

- A) 34 B) 52.5 C) 76 D) 58

28) $\int_1^e \frac{5}{x} dx$ 28) _____

- A) -5 B) $-\frac{5}{2}e^2$ C) 5 D) 0

Provide an appropriate response.

29) Find the average value of the function $g(x) = 32e^{0.04x}$ over the interval $[10, 30]$. Round your answer to two decimal places. 29) _____

- A) 2.29 B) 45.71 C) 73.13 D) 1462.63

30) Find the average value of the function $y = 2x^4$ over the interval $[-2, 2]$. 30) _____

- A) 0 B) $\frac{32}{5}$ C) $\frac{16}{5}$ D) $\frac{128}{5}$