1. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x}dx =$

(a) $1+\frac{\pi}{6}$
(b) 1
(c) $4-\frac{\pi}{6}$
(d) $1-\frac{\pi}{3}$
(e) none of the above

---

2. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x+1)^2(x^2-x-1)^3}$ is

(a) 10 (b) 7 (c) 5 (d) 8 (e) none

---

3. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x+3}+\frac{B}{x}+\frac{C}{x^2}+\frac{Dx+E}{x^2+9}+\frac{Fx+G}{(x^2+9)^2}$
(b) $\frac{A+Bx}{x^2}+\frac{Cx+D}{x^2+9}+\frac{Ex+F}{(x^2+9)^2}$
(c) $\frac{A}{x^2}+\frac{B}{(x^2+9)^2}$
(d) $\frac{A}{x}+\frac{B}{x^2}+\frac{Cx+D}{x^2+9}+\frac{Ex+F}{(x^2+9)^2}$
(e) none of the above

---

4. The arc length of the curve $y=\frac{x^3}{12}+\frac{1}{x}$ from $x=1$ to $x=2$ is

(a) $\frac{1}{12}$ (b) $\frac{13}{12}$ (c) $\frac{1}{6}$ (d) 1 (e) none

---

5. $\int_2^3 \frac{1}{x^2-1}dx =$

(a) $\ln\sqrt{3/2}$
(b) $\ln\sqrt{6/5}$
(c) $\ln\sqrt{4/3}$
(d) $\ln\sqrt{3/4}$
(e) none of the above

---

6. $\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1}dx =$

(a) $\pi/3$ (b) 2π (c) 9π (d) 3π (e) none

---

7. The value of c that satisfies the Mean Value Theorem of integrals for $f(x)=1+6\sqrt{x}$ over the interval $[0,4]$ is

(a) 4 (b) $\frac{16}{9}$ (c) $\frac{6}{9}$ (d) $\frac{3}{2}$ (e) none

8. $\int_0^1 4\tan^{-1}x\ dx =$

(a) $\pi-\ln 4$
(b) $\frac{\pi}{\ln 4}$
(c) $-\frac{\pi}{4}$
(d) $\frac{\pi}{4}$
(e) none of the above

---

9. $\int_1^2 (x^2+1)sech(\ln x)dx =$

(a) $csch(e^2)-coth(e)$
(b) 3
(c) $tanh(e)$
(d) 8
(e) none of the above1A

---

10. The region bounded by the graphs of $y=3x-x^2-2$, and $y=0$ is rotated about the line $x=-2$. Then the volume of resulting solid is given by

(a) $2\pi\int_1^2 (x-1)(x^2-4)dx$
(b) $-2\pi\int_1^2 (x+2)(x-1)(x-2)dx$
(c) $2\pi\int_1^2 (x+3)(x-1)(x+2)dx$
(d) $-2\pi\int_1^2 (x+3)(x-1)(x-2)dx$
(e) none of the above

---

11. If $I=\int_e^\infty (\ln x)^3dx$, then

(a) $0\le I\le 6$
(b) $1\le 6e^3$
(c) $I\ge -e$
(d) $3e\le I\le e^3$
(e) none of the above

---

12. $\int_{-1}^0 x^5e^{-x^3}dx =$

(a) $-\frac{1}{3}$ (b) none (c) $-\frac{1}{5}$ (d) $-\frac{1}{15}$ (e) $-\frac{5}{3}$

1. If $I = \int_e^{\infty} (\ln x)^3 dx$, then
   (a) $0 \le I \le 6$
   (b) $I \le 6e^3$
   (c) $3e \le I \le e^3$
   (d) $I \ge -e$
   (e) none of the above

2. $\int_2^3 \frac{1}{x^2-1} dx =$
   (a) $\ln\sqrt{6/5}$
   (b) $\ln\sqrt{4/3}$
   (c) $\ln\sqrt{3/2}$
   (d) $\ln\sqrt{3/4}$
   (e) none of the above

3. $\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1} dx =$
   (a) 2π (b) 3π (c) $\pi/3$ (d) 9π (e) none

4. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is
   (a) $\frac{1}{12}$ (b) 1 (c) $\frac{1}{6}$ (d) $\frac{13}{12}$ (e) none

5. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x-3)^2(x^2-x-1)^3}$ is
   (a) 7 (b) 10 (c) 8 (d) 5 (e) none

6. $\int_1^2 (x^2+1) sech(\ln x) dx =$
   (a) 8
   (b) $tanh(e)$
   (c) 3
   (d) $csch(e^2) - coth(e)$
   (e) none of the above

7. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by
   (a) $-2\pi \int_1^2 (x+3)(x-1)(x-2)dx$
   (b) $2\pi \int_1^2 (x-1)(x^2-4)dx$
   (c) $-2\pi \int_1^2 (x+2)(x-1)(x-2)dx$
   (d) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$
   (e) none of the above

8. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$
   (a) 1 (b) $4 - \frac{\pi}{6}$ (c) $1 - \frac{\pi}{3}$ (d) $1 + \frac{\pi}{6}$ (e) none

9. $\int_{-1}^{0} x^5 e^{-x^3} dx =$
   (a) $-\frac{5}{3}$ (b) $-\frac{1}{5}$ (c) none (d) $-\frac{1}{15}$ (e) $-\frac{1}{3}$

10. $\int_0^1 4\tan^{-1} x \, dx =$
    (a) $\pi - \ln 4$ (b) $\frac{\pi}{4}$ (c) $-\frac{\pi}{4}$ (d) $\frac{\pi}{\ln 4}$ (e) none

11. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by
    (a) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$
    (b) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$
    (c) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
    (d) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
    (e) none of the above1B

12. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval [0, 4] is
    (a) $\frac{6}{9}$ (b) $\frac{3}{2}$ (c) $\frac{16}{9}$ (d) 4 (e) none

1. $\displaystyle\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1}dx =$

(a) 9π (b) 2π (c) 3π (d) $\pi/3$ (e) none

---

2. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{1}{12}$ (b) $\frac{13}{12}$ (c) $\frac{1}{6}$ (d) 1 (e) none

---

3. If $I = \displaystyle\int_{e}^{\infty} (\ln x)^3 dx$, then

(a) $0 \leq I \leq 6$
(b) $I \geq -e$
(c) $3e \leq I \leq e^3$
(d) $1 \leq 6e^3$
(e) none of the above

---

4. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval $[0, 4]$ is

(a) 4 (b) $\frac{6}{9}$ (c) $\frac{16}{9}$ (d) $\frac{3}{2}$ (e) none

---

5. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x+1)^2(x^2-x-1)^3}$ is

(a) 8 (b) 5 (c) 7 (d) 10 (e) none

---

6. $\displaystyle\int_{-1}^{0} x^5 e^{-x^3} dx =$

(a) $-\frac{1}{3}$ (b) none (c) $-\frac{1}{5}$ (d) $-\frac{1}{15}$ (e) $-\frac{5}{3}$

---

7. $\displaystyle\int_{1}^{2} (x^2+1) sech(\ln x) dx =$

(a) 8
(b) $tanh(e)$
(c) $csch(e^2) - coth(e)$
(d) 3
(e) none of the above

---

8. $\displaystyle\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

(a) $1 + \frac{\pi}{6}$
(b) $4 - \frac{\pi}{6}$
(c) $1 - \frac{\pi}{3}$
(d) 1
(e) none of the above

9. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(b) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$
(c) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$
(d) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(e) none of the above

---

10. $\displaystyle\int_{0}^{1} 4\tan^{-1} x \, dx =$

(a) $\frac{\pi}{\ln 4}$
(b) $-\frac{\pi}{4}$
(c) $\pi - \ln 4$
(d) $\frac{\pi}{4}$
(e) none of the above

---

11. $\displaystyle\int_{2}^{3} \frac{1}{x^2-1} dx =$

(a) $\ln\sqrt{6/5}$
(b) $\ln\sqrt{3/2}$
(c) $\ln\sqrt{4/3}$
(d) $\ln\sqrt{3/4}$
(e) none of the above2A

---

12. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $-2\pi\displaystyle\int_{1}^{2} (x+2)(x-1)(x-2)dx$
(b) $2\pi\displaystyle\int_{1}^{2} (x-1)(x^2-4)dx$
(c) $-2\pi\displaystyle\int_{1}^{2} (x+3)(x-1)(x-2)dx$
(d) $2\pi\displaystyle\int_{1}^{2} (x+3)(x-1)(x+2)dx$
(e) none of the above

1. If $I = \int_e^{\infty} (\ln x)^3 dx$, then

   (a) $3e \le I \le e^3$
   (b) $I \le 6e^3$
   (c) $0 \le I \le 6$
   (d) $I \ge -e$
   (e) none of the above

---

2. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

   (a) $1+\frac{\pi}{6}$ (b) $1-\frac{\pi}{3}$ (c) $4-\frac{\pi}{6}$ (d) 1 (e) none

---

3. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x-3)^2(x^2-x-1)^3}$ is

   (a) 7 (b) 5 (c) 10 (d) 8 (e) none

---

4. $\int_0^1 4\tan^{-1} x \, dx =$

   (a) $-\frac{\pi}{4}$ (b) $\frac{\pi}{\ln 4}$ (c) $\pi - \ln 4$ (d) $\frac{\pi}{4}$ (e) none

---

5. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

   (a) $\frac{1}{6}$ (b) 1 (c) $\frac{13}{12}$ (d) $\frac{1}{12}$ (e) none

---

6. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

   (a) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
   (b) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$
   (c) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$
   (d) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
   (e) none of the above

---

7. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

   (a) $-2\pi \int_1^2 (x+3)(x-1)(x-2)dx$
   (b) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$
   (c) $2\pi \int_1^2 (x-1)(x^2-4)dx$
   (d) $-2\pi \int_1^2 (x+2)(x-1)(x-2)dx$
   (e) none of the above

8. $\int_1^2 (x^2+1)sech(\ln x)dx =$

   (a) 3
   (b) 8
   (c) $tanh(e)$
   (d) $csch(e^2) - coth(e)$
   (e) none of the above

---

9. $\int_{-1}^0 x^5 e^{-x^3} dx =$

   (a) $-\frac{5}{3}$ (b) $-\frac{1}{15}$ (c) none (d) $-\frac{1}{3}$ (e) $-\frac{1}{5}$

---

10. $\int_{-1/2}^1 \frac{3\sqrt{3}dx}{x^2+x+1} dx =$

   (a) 9π (b) $\pi/3$ (c) 3π (d) 2π (e) none

---

11. $\int_2^3 \frac{1}{x^2-1} dx =$

   (a) $\ln\sqrt{4/3}$
   (b) $\ln\sqrt{3/2}$
   (c) $\ln\sqrt{3/4}$
   (d) $\ln\sqrt{6/5}$
   (e) none of the above2B

---

12. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval [0, 4] is

   (a) $\frac{16}{9}$
   (b) 4
   (c) $\frac{6}{9}$
   (d) $\frac{3}{2}$
   (e) none of the above

1. $\int_1^2 (x^2+1)sech(\ln x)dx =$

(a) $csch(e^2) - coth(e)$
(b) 8
(c) $tanh(e)$
(d) 3
(e) none of the above

---

2. $\int_{-1}^{0} x^5 e^{-x^3} dx =$

(a) $-\frac{5}{3}$ (b) $-\frac{1}{15}$ (c) none (d) $-\frac{1}{5}$ (e) $-\frac{1}{3}$

---

3. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $-2\pi \int_1^2 (x+2)(x-1)(x-2)dx$
(b) $2\pi \int_1^2 (x-1)(x^2-4)dx$
(c) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$
(d) $-2\pi \int_1^2 (x+3)(x-1)(x-2)dx$
(e) none of the above

---

4. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval [0, 4] is

(a) $\frac{3}{2}$ (b) $\frac{16}{9}$ (c) 4 (d) $\frac{6}{9}$ (e) none

---

5. $\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1} dx =$

(a) 2π
(b) 9π
(c) $\pi/3$
(d) 3π
(e) none of the above

---

6. If $I = \int_e^\infty (\ln x)^3 dx$, then

(a) $3e \leq I \leq e^3$
(b) $0 \leq I \leq 6$
(c) $I \geq -e$
(d) $1 \leq 6e^3$
(e) none of the above

7. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

(a) $1+\frac{\pi}{6}$ (b) $4-\frac{\pi}{6}$ (c) $1-\frac{\pi}{3}$ (d) 1 (e) none

---

8. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$
(b) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(c) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(d) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$
(e) none of the above3A

---

9. $\int_0^1 4\tan^{-1} x \; dx =$

(a) $\frac{\pi}{\ln 4}$
(b) $\pi - \ln 4$
(c) $\frac{\pi}{4}$
(d) $-\frac{\pi}{4}$
(e) none of the above

---

10. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x+1)^2(x^2-x-1)^3}$ is

(a) 7 (b) 8 (c) 5 (d) 10 (e) none

---

11. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{13}{12}$ (b) 1 (c) $\frac{1}{12}$ (d) $\frac{1}{6}$ (e) none

---

12. $\int_2^3 \frac{1}{x^2-1} dx =$

(a) $\ln\sqrt{4/3}$
(b) $\ln\sqrt{6/5}$
(c) $\ln\sqrt{3/2}$
(d) $\ln\sqrt{3/4}$
(e) none of the above

1. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{1}{12}$ (b) $\frac{1}{6}$ (c) 1 (d) $\frac{13}{12}$ (e) none

---

2. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x-3)^2(x^2-x-1)^3}$ is

(a) 7 (b) 8 (c) 10 (d) 5 (e) none

---

3. $\displaystyle\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x}dx =$

(a) 1
(b) $1+\frac{\pi}{6}$
(c) $4-\frac{\pi}{6}$
(d) $1-\frac{\pi}{3}$
(e) none of the above

---

4. If $I = \displaystyle\int_e^{\infty} (\ln x)^3 dx$, then

(a) $I \leq 6e^3$
(b) $I \geq -e$
(c) $0 \leq I \leq 6$
(d) $3e \leq I \leq e^3$
(e) none of the above

---

5. $\displaystyle\int_0^1 4\tan^{-1} x \; dx =$

(a) $-\frac{\pi}{4}$ (b) $\frac{\pi}{4}$ (c) $\pi - \ln 4$ (d) $\frac{\pi}{\ln 4}$ (e) none

---

6. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval [0, 4] is

(a) $\frac{6}{9}$ (b) 4 (c) $\frac{3}{2}$ (d) $\frac{16}{9}$ (e) none

---

7. $\displaystyle\int_2^3 \frac{1}{x^2-1}dx =$

(a) $\ln\sqrt{3/2}$
(b) $\ln\sqrt{4/3}$
(c) $\ln\sqrt{3/4}$
(d) $\ln\sqrt{6/5}$
(e) none of the above

8. $\displaystyle\int_1^2 (x^2+1)sech(\ln x)dx =$

(a) $csch(e^2) - coth(e)$
(b) 8
(c) 3
(d) $tanh(e)$
(e) none of the above

---

9. $\displaystyle\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1}dx =$

(a) 2π (b) 3π (c) 9π (d) $\pi/3$ (e) none

---

10. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(b) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$
(c) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$
(d) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$
(e) none of the above3B

---

11. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $-2\pi\displaystyle\int_1^2 (x+2)(x-1)(x-2)dx$
(b) $2\pi\displaystyle\int_1^2 (x-1)(x^2-4)dx$
(c) $2\pi\displaystyle\int_1^2 (x+3)(x-1)(x+2)dx$
(d) $-2\pi\displaystyle\int_1^2 (x+3)(x-1)(x-2)dx$
(e) none of the above

---

12. $\displaystyle\int_{-1}^{0} x^5 e^{-x^3} dx =$

(a) $-\frac{1}{3}$ (b) $-\frac{5}{3}$ (c) $-\frac{1}{5}$ (d) $-\frac{1}{15}$ (e) none of the above

1. $\int_{-1}^{0} x^5 e^{-x^3} dx =$

(a) none (b) $-\frac{5}{3}$ (c) $-\frac{1}{15}$ (d) $-\frac{1}{3}$ (e) $-\frac{1}{5}$

---

2. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $-2\pi \int_1^2 (x+2)(x-1)(x-2)dx$

(b) $-2\pi \int_1^2 (x+3)(x-1)(x-2)dx$

(c) $2\pi \int_1^2 (x-1)(x^2-4)dx$

(d) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$

(e) none of the above

---

3. $\int_0^1 4\tan^{-1} x \; dx =$

(a) $\pi - \ln 4$

(b) $\frac{\pi}{4}$

(c) $\frac{\pi}{\ln 4}$

(d) $-\frac{\pi}{4}$

(e) none of the above

---

4. If $I = \int_e^{\infty} (\ln x)^3 dx$, then

(a) $0 \le I \le 6$

(b) $3e \le I \le e^3$

(c) $1 \le 6e^3$

(d) $I \ge -e$

(e) none of the above

---

5. $\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1} dx =$

(a) 9π (b) $\pi/3$ (c) 2π (d) 3π (e) none

---

6. $\int_2^3 \frac{1}{x^2-1} dx =$

(a) $\ln\sqrt{6/5}$

(b) $\ln\sqrt{3/4}$

(c) $\ln\sqrt{3/2}$

(d) $\ln\sqrt{4/3}$

(e) none of the above

7. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

(a) 1

(b) $1 + \frac{\pi}{6}$

(c) $4 - \frac{\pi}{6}$

(d) $1 - \frac{\pi}{3}$

(e) none of the above

---

8. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval $[0, 4]$ is

(a) $\frac{16}{9}$ (b) 4 (c) $\frac{6}{9}$ (d) $\frac{3}{2}$ (e) none

---

9. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{1}{6}$ (b) $\frac{1}{12}$ (c) 1 (d) $\frac{13}{12}$ (e) none

---

10. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x+1)^2(x^2-x-1)^3}$ is

(a) 8 (b) 7 (c) 10 (d) 5 (e) none

---

11. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(b) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(c) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$

(d) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$

(e) none of the above4A

---

12. $\int_1^2 (x^2+1) sech(\ln x) dx =$

(a) 3

(b) $tanh(e)$

(c) $csch(e^2) - coth(e)$

(d) 8

(e) none of the above

1. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x+3}+\frac{B}{x}+\frac{C}{x^2}+\frac{Dx+E}{x^2+9}+\frac{Fx+G}{(x^2+9)^2}$

(b) $\frac{A}{x^2}+\frac{B}{(x^2+9)^2}$

(c) $\frac{A}{x}+\frac{B}{x^2}+\frac{Cx+D}{x^2+9}+\frac{Ex+F}{(x^2+9)^2}$

(d) $\frac{A+Bx}{x^2}+\frac{Cx+D}{x^2+9}+\frac{Ex+F}{(x^2+9)^2}$

(e) none of the above

---

2. $\int_{-1}^{0} x^5 e^{-x^3} dx =$

(a) $-\frac{1}{5}$ (b) $-\frac{5}{3}$ (c) $-\frac{1}{15}$ (d) none (e) $-\frac{1}{3}$

---

3. $\int_{0}^{1} 4\tan^{-1} x \, dx =$

(a) $\pi - \ln 4$

(b) $\frac{\pi}{4}$

(c) $-\frac{\pi}{4}$

(d) $\frac{\pi}{\ln 4}$

(e) none of the above

---

4. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

(a) 1

(b) $1+\frac{\pi}{6}$

(c) $4-\frac{\pi}{6}$

(d) $1-\frac{\pi}{3}$

(e) none of the above

---

5. $\int_{1}^{2} (x^2+1) sech(\ln x) dx =$

(a) 8

(b) $csch(e^2) - coth(e)$

(c) 3

(d) $tanh(e)$

(e) none of the above

---

6. $\int_{2}^{3} \frac{1}{x^2-1} dx =$

(a) $\ln\sqrt{6/5}$

(b) $\ln\sqrt{3/4}$

(c) $\ln\sqrt{3/2}$

(d) $\ln\sqrt{4/3}$

(e) none of the above

---

7. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x-3)^2(x^2-x-1)^3}$ is

(a) 10 (b) 5 (c) 8 (d) 7 (e) none

---

8. If $I = \int_{e}^{\infty} (\ln x)^3 dx$, then

(a) $0 \le I \le 6$

(b) $I \le 6e^3$

(c) $3e \le I \le e^3$

(d) $I \ge -e$

(e) none of the above

---

9. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $2\pi \int_{1}^{2} (x-1)(x^2-4) dx$

(b) $2\pi \int_{1}^{2} (x+3)(x-1)(x+2) dx$

(c) $-2\pi \int_{1}^{2} (x+2)(x-1)(x-2) dx$

(d) $-2\pi \int_{1}^{2} (x+3)(x-1)(x-2) dx$

(e) none of the above4B

---

10. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) 1 (b) $\frac{1}{12}$ (c) $\frac{13}{12}$ (d) $\frac{1}{6}$ (e) none

---

11. $\int_{-1/2}^{1} \frac{3\sqrt{3}dx}{x^2+x+1} dx =$

(a) $\pi/3$ (b) 2π (c) 3π (d) 9π (e) none

---

12. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval $[0, 4]$ is

(a) $\frac{3}{2}$ (b) 4 (c) $\frac{16}{9}$ (d) $\frac{6}{9}$ (e) none

1. The value of c that satisfies the Mean Value Theorem of integrals for $f(x) = 1 + 6\sqrt{x}$ over the interval [0, 4] is

(a) $\frac{16}{9}$ (b) $\frac{3}{2}$ (c) $\frac{6}{9}$ (d) 4 (e) none

---

2. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

(a) $-2\pi \int_1^2 (x+2)(x-1)(x-2)dx$

(b) $-2\pi \int_1^2 (x+3)(x-1)(x-2)dx$

(c) $2\pi \int_1^2 (x-1)(x^2-4)dx$

(d) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$

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3. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(b) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$

(c) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(d) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$

(e) none of the above

---

4. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x+1)^2(x^2-x-1)^3}$ is

(a) 8 (b) 10 (c) 5 (d) 7 (e) none

---

5. $\int_0^1 4\tan^{-1} x \, dx =$

(a) $\pi - \ln 4$ (b) $\frac{\pi}{4}$ (c) $-\frac{\pi}{4}$ (d) $\frac{\pi}{\ln 4}$ (e) none

---

6. $\int_2^3 \frac{1}{x^2-1}dx =$

(a) $\ln\sqrt{3/2}$

(b) $\ln\sqrt{6/5}$

(c) $\ln\sqrt{3/4}$

(d) $\ln\sqrt{4/3}$

(e) none of the above

7. $\int_1^2 (x^2+1)sech(\ln x)dx =$

(a) 3

(b) 8

(c) $tanh(e)$

(d) $csch(e^2) - coth(e)$

(e) none of the above

---

8. $\int_{-1/2}^1 \frac{3\sqrt{3}dx}{x^2+x+1}dx =$

(a) 2π

(b) 3π

(c) 9π

(d) $\pi/3$

(e) none of the above

---

9. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{13}{12}$ (b) $\frac{1}{12}$ (c) $\frac{1}{6}$ (d) 1 (e) none

---

10. $\int_{-1}^0 x^5 e^{-x^3} dx =$

(a) $-\frac{1}{3}$ (b) $-\frac{5}{3}$ (c) $-\frac{1}{5}$ (d) $-\frac{1}{15}$ (e) none of the above

---

11. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x}dx =$

(a) $4 - \frac{\pi}{6}$

(b) $1 - \frac{\pi}{3}$

(c) $1 + \frac{\pi}{6}$

(d) 1

(e) none of the above

---

12. If $I = \int_e^\infty (\ln x)^3 dx$, then

(a) $I \geq -e$

(b) $0 \leq I \leq 6$

(c) $3e \leq I \leq e^3$

(d) $1 \leq 6e^3$

(e) none of the above

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(a) $\frac{16}{9}$ (b) $\frac{3}{2}$ (c) $\frac{6}{9}$ (d) 4 (e) none

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2. The region bounded by the graphs of $y = 3x - x^2 - 2$, and $y = 0$ is rotated about the line $x = -2$. Then the volume of resulting solid is given by

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(c) $2\pi \int_1^2 (x-1)(x^2-4)dx$

(d) $2\pi \int_1^2 (x+3)(x-1)(x+2)dx$

(e) none of the above

---

3. The general form of the partial fractions for $\frac{x+3}{(x+3)(x^3+9x)^2}$ is given by

(a) $\frac{A}{x} + \frac{B}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(b) $\frac{A}{x+3} + \frac{B}{x} + \frac{C}{x^2} + \frac{Dx+E}{x^2+9} + \frac{Fx+G}{(x^2+9)^2}$

(c) $\frac{A+Bx}{x^2} + \frac{Cx+D}{x^2+9} + \frac{Ex+F}{(x^2+9)^2}$

(d) $\frac{A}{x^2} + \frac{B}{(x^2+9)^2}$

(e) none of the above

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4. The number of partial fractions in the partial fraction decomposition of $\frac{x+3}{(x^2+x-3)^2(x^2-x-1)^3}$ is

(a) 10 (b) 8 (c) 5 (d) 7 (e) none

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5. $\int_0^1 4\tan^{-1} x \, dx =$

(a) $\pi - \ln 4$ (b) $\frac{\pi}{4}$ (c) $-\frac{\pi}{4}$ (d) $\frac{\pi}{\ln 4}$ (e) none

---

6. $\int_2^3 \frac{1}{x^2-1} dx =$

(a) $\ln\sqrt{3/2}$

(b) $\ln\sqrt{6/5}$

(c) $\ln\sqrt{3/4}$

(d) $\ln\sqrt{4/3}$

(e) none of the above

7. $\int_1^2 (x^2+1) sech(\ln x) dx =$

(a) 3

(b) 8

(c) $tanh(e)$

(d) $csch(e^2) - coth(e)$

(e) none of the above

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8. $\int_{-1/2}^1 \frac{3\sqrt{3}dx}{x^2+x+1} dx =$

(a) 2π

(b) 3π

(c) 9π

(d) $\pi/3$

(e) none of the above

---

9. The arc length of the curve $y = \frac{x^3}{12} + \frac{1}{x}$ from $x = 1$ to $x = 2$ is

(a) $\frac{13}{12}$ (b) $\frac{1}{12}$ (c) $\frac{1}{6}$ (d) 1 (e) none

---

10. $\int_{-1}^0 x^5 e^{-x^3} dx =$

(a) $-\frac{1}{3}$

(b) $-\frac{5}{3}$

(c) $-\frac{1}{5}$

(d) $-\frac{1}{15}$

(e) none of the above

---

11. $\int_{\pi/6}^{\pi/3} \frac{1+\sin x}{1-\sin x} dx =$

(a) $4 - \frac{\pi}{6}$

(b) $1 - \frac{\pi}{3}$

(c) $1 + \frac{\pi}{6}$

(d) 1

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12. If $I = \int_e^\infty (\ln x)^3 dx$, then

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(d) $I \leq 6e^3$

(e) none of the above

Q	MASTER	CODE01A	CODE02A	CODE03A	CODE04A
1	A	C	B	D	D
2	A	D	B	E	A
3	A	D	B	A	A
4	A	B	C	B	D
5	A	A	A	A	C
6	A	B	A	C	C
7	A	B	D	B	C
8	A	A	B	B	A
9	A	B	D	B	D
10	A	B	C	B	A
11	A	C	B	A	A
12	A	A	A	C	A

Answer Counts

V	A	B	C	D	E
1	3	5	2	2	0
2	3	5	2	2	0
3	3	5	2	1	1
4	6	0	3	3	0

Q	MASTER	CODE01B	CODE02B	CODE03B	CODE04B
1	A	D	D	D	C
2	A	C	C	C	E
3	A	A	C	C	A
4	A	D	C	B	C
5	A	B	C	C	C
6	A	C	D	D	C
7	A	C	D	A	A
8	A	B	A	C	D
9	A	E	D	A	C
10	A	A	D	A	C
11	A	C	B	A	B
12	A	C	A	A	C

Answer Counts

V	A	B	C	D	E
1	2	2	5	2	1
2	2	1	4	5	0
3	5	1	4	2	0
4	2	1	7	1	1