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## Definite Integral

- $\int_{-1}^0 \frac{dx}{x^2 + 2x + 2}$  is equal to  
 (A) 0 (B)  $\frac{\pi}{4}$   
 (C)  $-\frac{\pi}{2}$  (D)  $-\frac{\pi}{4}$
- The value of  $\int_0^1 \frac{dx}{x + \sqrt{1-x^2}}$  is  
 (A)  $\frac{\pi}{3}$  (B)  $\frac{\pi}{2}$   
 (C)  $\frac{1}{2}$  (D)  $\frac{\pi}{4}$
- $\int_a^b \frac{\sqrt{x} dx}{\sqrt{x} + \sqrt{a+b-x}}$  is  
 (A)  $\pi$  (B)  $\frac{1}{2}(b-a)$   
 (C)  $\frac{\pi}{2}$  (D)  $b-a$
- $\int_{-2}^2 |x| dx$  is equal to  
 (A) 0 (B) 1  
 (C) 2 (D) 4
- The value of  $\int_2^3 \frac{x+1}{x^2(x-1)} dx$  is  
 (A)  $\log \frac{16}{9} + \frac{1}{6}$  (B)  $\log \frac{16}{9} - \frac{1}{6}$   
 (C)  $2 \log 2 - \frac{1}{6}$  (D)  $\log \frac{4}{3} - \frac{1}{6}$
- If  $f(x)$  is an even function, what is  $\int_0^\pi f(\cos x) dx$  equal to?  
 (A) 0 (B)  $\int_0^{\pi/2} f(\cos x) dx$   
 (C)  $2 \int_0^{\pi/2} f(\cos x) dx$  (D) 1
- $\int_{-1}^1 |1-x| dx$  is equal to  
 (A) -2 (B) 0  
 (C) 2 (D) 4
- $\int_0^{\pi/2} \frac{\cos \theta}{\sqrt{4-\sin^2 \theta}} d\theta$  is equal to  
 (A)  $\frac{\pi}{2}$  (B)  $\frac{\pi}{6}$   
 (C)  $\frac{\pi}{3}$  (D)  $\frac{\pi}{5}$
- What is the value of  $\int_{\pi/6}^{\pi/4} \frac{dx}{\sin x \cos x}$ ?  
 (A)  $2 \log \sqrt{3}$  (B)  $\log \sqrt{3}$   
 (C)  $2 \log 3$  (D)  $4 \log 3$
- $\int_{-\pi/4}^{\pi/4} x^3 \sin^4 x dx$  is equal to  
 (A)  $\frac{\pi}{4}$  (B)  $\frac{\pi}{2}$   
 (C)  $\frac{\pi}{8}$  (D) 0
- $\int_0^{\pi/2} \frac{\cos x}{1+\sin x} dx$  equals to  
 (A)  $\log 2$  (B)  $2 \log 2$   
 (C)  $(\log 2)^2$  (D)  $\frac{1}{2} \log 2$
- $\int_{\pi/6}^{\pi/3} \frac{dx}{1+\sqrt{\tan x}}$  is equal to  
 (A)  $\frac{\pi}{12}$  (B)  $\frac{\pi}{2}$   
 (C)  $\frac{\pi}{6}$  (D)  $\frac{\pi}{4}$
- $\int_{-\pi}^{\pi} \frac{\sin^4 x}{\sin^4 x + \cos^4 x} dx$  is equal to  
 (A)  $\frac{\pi}{4}$  (B)  $\frac{\pi}{2}$   
 (C)  $\pi$  (D)  $2\pi$

14. What is  $\int_0^{\pi/2} \frac{\sin^3 x}{\sin^3 x + \cos^3 x} dx$  ?  
 (A)  $\pi$  (B)  $\frac{\pi}{2}$   
 (C)  $\frac{\pi}{4}$  (D) 0
15. What is  $\int_{-\pi/4}^{\pi/4} \tan^3 x dx$  equal to?  
 (A)  $\sqrt{3}$  (B)  $\frac{1}{3}$   
 (C)  $\frac{1}{2}$  (D) 0
16.  $\int_{-a}^a (x^3 + 5x + \sin x) dx$  is equal to  
 (A)  $4 + \sin a$  (B)  $3 + \sin a + \cos a$   
 (C) 0 (D)  $4 - \sin a$
17. What is the value of  $\int_{-\pi/2}^{\pi/2} |\sin x| dx$  ?  
 (A) 2 (B) 1  
 (C)  $\pi$  (D) 0
18. What is  $\int_0^1 x(1-x)^n dx$  is equal to?  
 (A)  $\frac{1}{n(n+1)}$  (B)  $\frac{1}{(n+1)(n+2)}$   
 (C) 1 (D) 0
19.  $\int_0^{\pi/2} e^{\sin x} \cos x dx$  is equal to  
 (A)  $e + 1$  (B)  $e - 1$   
 (C)  $e + 2$  (D)  $e$
20. The value of  $\int_{-2}^2 (ax^3 + bx + c) dx$  depends on which of the following?  
 (A) Values of  $x$  only  
 (B) Values of each of  $a, b$  and  $c$   
 (C) Values of  $c$  only  
 (D) Values of  $b$  only
21.  $\int_0^{\pi/2} \sin x \cos^8 x dx$  is equal to  
 (A)  $\frac{35\pi}{256}$  (B)  $\frac{70}{256}$   
 (C)  $\frac{16}{35}$  (D)  $\frac{8\pi}{35}$
22.  $\int_{-1}^1 \log(x + \sqrt{x^2 + 1}) dx$  is equal to  
 (A) 0 (B)  $\log 2$   
 (C)  $\log \frac{1}{2}$  (D) None of these
23. If  $F(x) = \int_{x^2}^{x^3} \log t dt$ , ( $x > 0$ ), then  $F'(x)$  is equal to  
 (A)  $(9x^2 - 4x) \log x$  (B)  $(4x - 9x^2) \log x$   
 (C)  $(9x^2 + 4x) \log x$  (D) None of these
24.  $\int_0^{\pi} e^{\sin^2 x} \cos^3 x dx$  is equal to  
 (A) -1 (B) 0  
 (C) - (D)  $\pi$
25.  $\int_1^2 \{k^2 + (4 - 4k)x + 4x^3\} dx \leq 12$ , which one of the following is correct?  
 (A)  $k = 3$  (B)  $0 \leq k < 3$   
 (C)  $k \leq 4$  (D)  $k = 0$