

India's Number 1 Education App

MATHS

BOOKS - NIKITA MATHS (HINGLISH)

CONTINUITY

MULTIPLE CHOICE QUESTIONS

1. The function
$$f(x)=rac{2x^2+7}{x^3+3x^2-x-3}$$
 is discontinuous for

A.
$$x=1$$
 only

B.
$$x=1,-1$$
 only

C.
$$x=1,\;-1,\;-3$$
 and other values of x

D.
$$x = 1, -1, -3$$
 only

Answer: D

2. Find the points of discontinuity of
$$y=\frac{1}{u^2+u-2}$$
, where $u=\frac{1}{x-1}$

A.
$$x = 2, \frac{1}{2}$$

B.
$$x = 1, 2, \frac{1}{2}$$

C.
$$x = 2, \frac{-1}{2}$$

D.
$$z = 1, 2, \frac{-1}{2}$$

Answer: B



Watch Video Solution

3. If f(x) is continuous at x=3, where $f(x)=\dfrac{x^2-7x+12}{x^2-5x+6}$, for x
eq 3, then f(3)=

A. -1

B. 1

Answer: A



Watch Video Solution

- **4.** If f(x) is continuous for all x, where $f(x)=\left\{egin{array}{c} rac{x^2-7x+12}{\left(x-2
 ight)^2}, ext{ for } & x
 eq 2 \ k, ext{ for } x=2 \end{array}
 ight.$
- then k =
 - A. 7
 - B. -7
 - $\mathsf{C}.\pm7$
 - D. None of these

Answer: A



View Text Solution

5. if the function
$$f(x)=rac{x^2-(a+2)x+a}{x-2}$$
 for $x
eq 2$ and $f(x)=2$ for $x=2$ is continuous function at $x=2$ then value of a is:

B. -1

Answer: D



6. If
$$f(x)$$
 is continuous at $x=2$, where $f(x)=\dfrac{\left(x^2-x-2\right)^{20}}{\left(x^3-12x+16\right)^{10}},$ for $x
eq 2$, then $f(2)=$

A.
$$\frac{3^{20}}{2^{10}}$$

$$\cdot \frac{3}{2^{20}}$$

C.
$$\left(\frac{3}{2}\right)^{10}$$
D. $\left(\frac{3}{2}\right)^{20}$

Answer: C



Watch Video Solution

7. If
$$f(x)$$
 is continuous at $x=-2$, where $f(x)=rac{2}{x+2}+rac{1}{x^2-2x+4}-rac{24}{x^3+8},$ for $x
eq -2$, then $f(-2)=$

A.
$$\frac{-1}{4}$$

B.
$$\frac{1}{4}$$

c.
$$\frac{11}{12}$$

D.
$$\frac{-11}{12}$$

Answer: D



8. If
$$f(x)$$
 is continuous at $x=1$, where $f(x)=\dfrac{x^n-1}{x-1}$, for $x
eq 1$, then

$$f(1) =$$

A.
$$\frac{1}{n}$$

B.
$$\frac{1}{n(n-1)}$$

D.
$$n(n-1)$$

Answer: C



Watch Video Solution

9. Examine the continuity of the given function at given points

$$f(x) = rac{x + 3x^2 + 5x^3 + \ldots \ldots + (2n-1)x^n - n^2}{x-1}, \quad ext{for} \quad x
eq 1$$

$$x=1 ext{ and } = rac{n\left(n^2-1
ight)}{3}$$
, for $x=1$

A.
$$\frac{n(n+1)(2n-1)}{6}$$

C. -6
D.
$$\frac{1}{6}$$

B. $\frac{n(n+1)(2n-1)}{3}$

c. $\frac{n(n+1)(4n-1)}{6}$

D. $\frac{n(n+1)(4n-1)}{3}$

Watch Video Solution

10. If f(x) is continuous at x=3, where $f(x)=\left\{egin{array}{c} rac{x^2-9}{x-3} & ext{, for } x
eq 3 \ 2x+k & ext{, otherwise} \end{array}
ight.$

Answer: C

then k =

A. 0

B. 3

Watch Video Solution



Answer: A

11. If
$$f(x)$$
 is continuous at $x=16$, where

$$f(x)=\left\{ egin{aligned} rac{x^8-\left(\,256\,
ight)^4}{x^4-\left(\,16\,
ight)^4},\,\mathrm{for}x
eq16\ k,\,\mathrm{for}x=16 \end{aligned}
ight.$$
 , then $k=$

A.
$$(16)^4$$

$$\mathrm{B.}\,2{(16)}^4$$

$$C.4(16)^4$$

D.
$$3(16)^4$$

Answer: B



(c) 2 (d) 4

12. The value of
$$f(0)$$
, so that the function $f(x)=rac{(27-2x)^2-3}{9-3(243+5x)^{1/5}-2}(x
eq0)$ is continuous, is given $rac{2}{3}$ (b) 6

B. 2

$$\mathsf{C.}\,\frac{-2}{3}$$

D. $\frac{2}{3}$

Answer: B



Watch Video Solution

13. If $f(x) = \left(1+x\right)^{5/x}$ is continuous at x=0, then what is the value of

A. $\frac{1}{3}$

 $\mathsf{B.}\ \frac{1}{2}$

 $\mathsf{C.}\,\frac{5}{6}$ D. $\frac{1}{6}$

Answer: D

14. If the function f(x) defined as
$$: f(x) = \frac{x^4 - 64x}{\sqrt{x^2 + 9} - 5}$$
, for $x \neq 4$ and

=3 , for
$$x=4$$
 Show that f(x) has a removable discontinuity at $x=4$

Answer: B



Watch Video Solution

15. The value of f(0), so that the function $f(x)=rac{\sqrt{a^2-ax+x^2}-\sqrt{a^2+ax+x^2}}{\sqrt{a+x}-\sqrt{a-x}}$ becomes continuous for all

$$x, ext{ given by } a^{rac{3}{2}} ext{ (b) } a^{rac{1}{2}} ext{ (c) } - a^{rac{1}{2}} ext{ (d) } - a^{rac{3}{2}}$$

A.
$$-a\sqrt{a}$$

B. $a\sqrt{a}$

 $\mathsf{C.}-\sqrt{a}$

D. \sqrt{a}

Answer: C



Watch Video Solution

16. Evaluate : $(\lim)_{x\stackrel{ ightarrow}{2}a^+} rac{\sqrt{x-2a}+\sqrt{x}-\sqrt{2a}}{x^2-4a^2}$

A. $2\sqrt{a}$

B. 2a

 $\mathsf{C.}\; \frac{1}{2\sqrt{a}}$

D. $\frac{1}{2a}$



Answer: C

17. If
$$f(x)$$

17. If
$$f(x)$$
 is continuous at $x=\sqrt{2}$, where

$$f(x)=rac{\sqrt{3+2x}-\left(\sqrt{2}+1
ight)}{x^2-2}$$
 , for $x
eq \sqrt{2}$, then $f\left(\sqrt{2}
ight)=$

A.
$$\dfrac{1}{2\Big(2+\sqrt{2}\Big)}$$

B.
$$\frac{1}{\sqrt{2}\left(2+\sqrt{2}\right)}$$
C. $\frac{1}{2+\sqrt{2}}$

D.
$$\frac{1}{2+2\sqrt{2}}$$

Answer: A



Watch Video Solution

18. If f(x) is continuous at x=5, where $f(x)=\frac{\sqrt{3+\sqrt{4+x}-\sqrt{6}}}{\sqrt{x}}$, for $x \neq 5$, then f(5) =

A.
$$\frac{1}{2\sqrt{6}}$$

C.
$$\dfrac{1}{12\sqrt{6}}$$
D. None of these

Answer: C



Watch Video Solution

19. If f(x) is continuous at x=0, where $f(x)=\sin x-\cos x$, for x
eq 0,

- - A. 2

then f(0) =

- B. 0
- C. -1
- D. 1

Answer: C



20. If
$$f(x)$$
 is continuous at

 $x
eq \frac{\pi}{2}$, then $f\left(\frac{\pi}{2}\right) =$

20. If
$$f(x)$$
 is continuous at $x=\dfrac{\pi}{2}$, where $f(x)=\dfrac{\sqrt{2-\sqrt{1+\sin x}}}{\cos^2 x}$, for

A.
$$4\sqrt{2}$$

B.
$$2\sqrt{2}$$

$$\mathsf{C.}\;\frac{1}{4\sqrt{2}}$$

D.
$$\frac{1}{2\sqrt{2}}$$

Answer: C



21. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{1-\tan x}{1-\sqrt{2}\sin x}$, for $x\neq\frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right)=$

B.
$$\sqrt{2}$$

$$\mathsf{C.}\,2\sqrt{2}$$

D.
$$\frac{1}{\sqrt{2}}$$

Answer: A



Watch Video Solution

22. If f(x) is continuous at x=0 ,where $f(x)=\dfrac{\sin\left(\pi\cos^2x\right)}{x^2}$,for

$$x
eq 0$$
 ,then $f(0) =$

A.
$$\frac{\pi}{2}$$

B. 1

 $\mathsf{C.}-\pi$

D. π

Answer: D



23. If
$$f(x)$$
 is continuous at $x=rac{\pi}{4}$ where $f(x)=rac{2\sqrt{2}-(\cos x+\sin x)^3}{1-\sin 2x}$,for $x
eqrac{\pi}{4}$ then $f\Big(rac{\pi}{4}\Big)=$

A.
$$\frac{3}{\sqrt{2}}$$

B. $\frac{\sqrt{2}}{3}$

C.
$$\frac{1}{\sqrt{2}}$$

D. $3\sqrt{2}$

Answer: A



Watch Video Solution

 $f(heta)=\left\{egin{array}{l} rac{1- an heta}{1-\sqrt{2}\sin heta}, ext{ for } & heta
eq rac{\pi}{4} \ rac{k}{2}, ext{ for } & heta=rac{\pi}{4} \end{array}
ight.$, then k=

A.
$$2\sqrt{2}$$

B. $4\sqrt{2}$

24. If f(x) is continuous at $heta=rac{\pi}{4}$, where

at
$$\theta = \frac{\pi}{4}$$
, where

C. 2

D. 4

Answer: D



Watch Video Solution

25. The function $f(x) = \frac{1-\sin x + \cos x}{1+\sin x + \cos x}$ is not defined at $x=\pi$. The value of $f(\pi)$, so that f(x) is continuous at $x=\pi$, is

A. -1

B. 1

 $\mathsf{C.}\,\frac{-1}{2}$

D. $\frac{1}{2}$

Answer: A



26. If f(x) is continuous at $x=\frac{\pi}{2}$, where $f(x)=\frac{\cos x}{\sqrt{1-\sin x}}$, for

26. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{2}$, where $f(x)=\frac{\pi}{\sqrt{1-\sin x}}$, for $x\neq\frac{\pi}{2}$, then $f\left(\frac{\pi}{2}\right)=$

A.
$$\frac{1}{2\sqrt{2}}$$

B.
$$\frac{1}{\sqrt{2}}$$

C.
$$2\sqrt{2}$$

D. $\sqrt{2}$

Answer: D



Watch Video Solution

27. If f(x) is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{\cos x - \sin x}{\cos 2x}$, for $x
eq \frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right) =$

A.
$$\frac{1}{\sqrt{2}}$$

$$\mathsf{B.}\;\frac{-1}{\sqrt{2}}$$

C.
$$\sqrt{2}$$

$$D.-\sqrt{2}$$

Answer: A



Watch Video Solution

28. If f(x) is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{2-\cos ec^2x}{\cot x-1}$, for $x\neq\frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right)=$

D. None of these

Answer: C



29. If f(x) is continuous at x=0, where $f(x)=\dfrac{\sin \left(x^2-x\right)}{x}$, for x
eq 0,

30. If f(x) is continuous at x=0, where

then
$$f(0) =$$

D. 2

Answer: A



View Text Solution

$$f(x)=\left\{egin{array}{l} rac{x\cos x+3 an x}{x^2+\sin x}, ext{for} & x
eq 0 \ k^2, ext{for} & x=0 \end{array}
ight.$$
 , then $k=$

 $\mathsf{C}.\pm 2$

D. None of these

Answer: C



Watch Video Solution

31. If f(x) is continuous at x=0, where

$$f(x)=rac{\sin(a+x)-\sin(a-x)}{\tan(a+x)-\tan(a-x)}, x
eq 0$$
, then $f(0)=$

A. $2\sec^3 a$

 $\mathsf{B.}\sec^3 a$

 $\mathsf{C.}\cos^3 a$

D. None of these

Answer: A



32.
$$f\!:\!R o R$$
 is defined by $f(x)=igg\{rac{\cos 3x-\cos x}{x^2},x
eq 0\lambda,x=0$ and f is continuous at $x=0$; then $\lambda=$

33. If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} \frac{1-\cos x}{x}, \ {
m for} \quad x
eq 0 \ k, \ {
m for} x=0 \end{array}
ight.$



Answer: A

Watch Video Solution

then k =

A.
$$\frac{1}{2}$$

B.
$$\frac{-1}{2}$$

B.
$$\frac{1}{2}$$

Answer: D



Watch Video Solution

34. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\left\{egin{array}{c} rac{1-\cos kx}{x^2}, \ ext{for} \quad x
eq 0 \ rac{1}{2}, \ ext{for} \quad x=0 \end{array}
ight.$

then k =

A. 1

B. -1

 $\mathsf{C}.\pm 1$

D. None of these

Answer: D



35. If f(x) is continuous at x=0, where $f(x)=\frac{1-\cos 3x}{x\tan x}$ for $x\neq 0$,

then
$$f(0) =$$

- A. $\frac{3}{2}$
- B. $\frac{9}{2}$
- C. $\frac{3}{4}$

D. None of these

Answer: B



- **36.** If the function f(x) $\begin{cases} rac{1-\cos 4x}{8x^2}, & x
 eq 0 \\ \mathrm{k}, & x = 0 \end{cases}$ is continuous at x = 0 then k =
 - A. 16
 - B. 2

C. -1

D. 1

Answer: D



Watch Video Solution

37. If f(x)= is continuous at x=0, where

$$f(x)=rac{(1-\cos 2x)(3+\cos x)}{x an 4x}$$
, for $x
eq 0$, then $f(0)=$

A. 2

B. $\frac{1}{2}$

C. 4

D. None of these

Answer: D



38. If $lpha,\,eta$ are the roots of $ax^2+bx+c=0$ and f(x) is continuous at

$$x=lpha$$
 , where $f(x)=rac{1-\cosig(ax^2+bx+cig)}{ig(x-lphaig)^2}$, for $x
eqlpha$, then $f(lpha)=$

A. 0

B.
$$\frac{4ac - b^2}{2}$$

C.
$$\frac{b^2-4ac}{2}$$

D. None of these

Answer: C



Watch Video Solution

39. If f(x) is continuous at x=0, where

$$f(x)=\left\{egin{array}{l} rac{\cos^2x-\sin^2x-1}{\sqrt{x^2+1}-1}, ext{ for } & x
eq 0 \ 2k, ext{ for } & x=0 \end{array}
ight.$$
 , then $k=$

A. -2

D. None of these

Answer: A



Watch Video Solution

40. If f(x) is continuous at x = a, where

$$f(x)=rac{\sin(a+x)+\sin(a-x)-2\sin a}{x\sin x},\, ext{for}\ \ x
eq a$$
 , then $f(a)=$

A.
$$\frac{2}{a}(\cos a - 1)$$

B.
$$\frac{1}{a}(\cos a - 1)$$

C.
$$\frac{1}{a}(1-\cos a)$$

D. None of these

Answer: A



41. If f(x) is continuous at x=0, where $f(x)=\dfrac{3-4\cos x+\cos 2x}{x^2}$,

for
$$x
eq 0$$
, then $f(0) =$

A. 0

B. 2

C. -2

D. 4

Answer: A



- **42.** If f(x) is continuous at x=0, where $f(x)=\dfrac{3-4\cos x+\cos 2x}{x^4}$, for $x \neq 0$, then f(0) =
 - A. $\frac{1}{4}$
 - B. $\frac{1}{2}$
 - C. 8

Answer: B



Watch Video Solution

43. The value of k which makes $f(x)=egin{cases} \sin\left(rac{1}{x}
ight), & \text{for } x
eq 0 \\ k, & \text{for } x=0 \end{cases}$ continuous at x=0 is

A. 0

B. 1

C. -1

D. no value of k

Answer: D



44. If the function f(x) defined by

$$f(x) = \left\{ egin{array}{ll} x \sinrac{1}{x}, & ext{for} & x
eq 0 \ k, & ext{for} & x = 0 \end{array}
ight.$$

is continuous at x = 0, then k is equal to

A. 0

B. 1

C. -1

D. $\frac{1}{2}$

Answer: A



Watch Video Solution

45. If f(x) is continuous at x=a, where $f(x)=(x-a)\mathrm{sin}\Big(\frac{1}{x-a}\Big)$, for $x \neq a$, then f(a) =

A. 1

B. -1

C. 0

 $D. \infty$

Answer: C



View Text Solution

46. If $(x) = \frac{1-\sqrt{3}\tan x}{\pi-6x}$, for $x \neq \frac{\pi}{6}$ is continous at

$$x = \frac{\pi}{6}$$
, find $f\left(\frac{\pi}{6}\right)$.

A.
$$\frac{1}{3\sqrt{3}}$$

B.
$$\frac{1}{2\sqrt{3}}$$

$$\operatorname{C.}\frac{2}{3\sqrt{3}}$$

D.
$$\frac{4}{3\sqrt{3}}$$

Answer: C



47. If
$$f(x)$$
 is conti

 $x \neq \frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right) =$

47. If
$$f(x)$$
 is continuous at $x=\dfrac{\pi}{4}$, where $f(x)=\dfrac{ an\Bigl(\dfrac{\pi}{4}-x\Bigr)}{\cot 2x}$, for

- A. 2
- B. 1
- C. $\frac{1}{2}$
- D. $\frac{1}{4}$

Answer: C



View Text Solution

48. Find the value of k, if the functions are continuous at the points given against them:

$$f(x)=rac{\sqrt{3}- an x}{\pi-3x}, \;\; ext{for} x
eq rac{\pi}{3} \ = k, \qquad \qquad ext{for} x=rac{\pi}{3} \ iggr\} at x=rac{\pi}{3}.$$

A.
$$\frac{-2}{3}$$

C.
$$\dfrac{\pi}{2}$$
D. $\dfrac{-\pi}{2}$

A. $\frac{1}{2}$

B. $\frac{-1}{2}$

B. $\frac{2}{3}$

c. $\frac{-4}{3}$

D. $\frac{4}{3}$

Answer: D

Watch Video Solution

 $x \neq \frac{\pi}{2}$, then $f\left(\frac{\pi}{2}\right) =$

49. If f(x) is continuous at $x=rac{\pi}{2}$, where $f(x)=rac{1-\sin x}{\left(rac{\pi}{2}-x
ight)^2}$, for

View Text Solution

50. If f(x) is continuous at $x=rac{\pi}{2}$, where $f(x)=rac{1-\sin x}{\left(\pi-2x
ight)^2}$, for

51. If $f(x)=\left\{ egin{array}{ll} \frac{1-\sin x}{\pi-2x} & ,x
eq rac{\pi}{2} \ \lambda & ,x=rac{\pi}{2} \end{array}
ight.$, be continuous at $x=rac{\pi}{2},$

$$x
eq rac{\pi}{2}$$
 , then $f\Bigl(rac{\pi}{2}\Bigr)=$

A.
$$\frac{-1}{4}$$

$$\mathsf{B.}\,\frac{-1}{8}$$

c.
$$\frac{1}{4}$$

D. $\frac{1}{8}$

Answer: D



View Text Solution

value of λ is

D. 2

Answer: C



Watch Video Solution

52. For what value of k, function $f(x)=egin{cases} rac{k\cos x}{\pi-2x}, & ext{if } x eq rac{\pi}{2} \ 3, & ext{if } x = rac{\pi}{2} \end{cases}$ is continuous at $x = \frac{\pi}{2}$?

- A. 3

B. -3

- C. 6
- D. -6

Answer: C



53. If f(x) is continuous at $x=\frac{\pi}{2}$, where

$$f(x)=rac{\cos ecx-\sin x}{rac{\pi}{2}-x}, ext{for} \;\; x
eq rac{\pi}{2}, ext{then } f\Big(rac{\pi}{2}\Big)=$$

A.
$$\frac{1}{4}$$

B. 0

$$\mathsf{C.}\;\frac{1}{6}$$

D. $\frac{1}{8}$

Answer: B



54. If
$$f(x)$$
 is continuous at $x=\pi$, where

$$f(x)=rac{\sqrt{2+\cos x}-1}{\left(\pi-x
ight)^2},\, ext{for}\;\;x
eq\pi, ext{then}\;f(\pi)=$$

A.
$$\frac{1}{4}$$

Answer: A **Watch Video Solution**

 $B. \frac{-1}{4}$

c. $\frac{1}{2}$

D. $\frac{-1}{2}$

Answer: B

55. If
$$f(x)$$
 is continuous at $x=\pi,$ where $f(x)=\dfrac{1-\cos(7(x-\pi))}{5{(x-\pi)}^2},$ for

$$x
eq\pi$$
 , then $f(\pi)=$

A.
$$\frac{49}{5}$$

B.
$$\frac{49}{10}$$

D. None of these

56. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=(1+2x)^{rac{1}{x}},$ for $\ x
eq 0$,

then f(0) =

A.
$$e^2$$

B.
$$e^{-2}$$

$$\mathsf{C.}\,2e$$

D. None of these

Answer: A



57. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\left\{ egin{array}{ll} (1+3x)^{rac{1}{x}}, & ext{for } x
eq 0, \\ k, & ext{for } x=0. \end{array}
ight.$

A.
$$e^{-3}$$

$${\rm B.}\,e^3$$

C.3e

D. None of these

Answer: B



Watch Video Solution

58. If f(x) is continuous at x=0, where

$$f(x)=\left(rac{4-3x}{4}
ight)^{rac{8}{x}}, ext{ for } \ x
eq 0, ext{ then } f(0)=$$

A. e^{-3}

B. e^{-4}

C. e^{-6}

D. e^{-12}

Answer: C



59. If
$$f(x)=\left\{egin{array}{l} rac{x^2-4}{x-2}, ext{ for } & x
eq 2 \ 5, ext{ for } & x=2 \end{array}
ight.$$
 , then at $x=2$

A. f is continuous if f(0) = -2

B. f is continuous

C. f has removable discontinuity

D. f has irremovable discontinuity

Answer: C



Watch Video Solution

60. If
$$f(x)=\left\{egin{array}{l} \sqrt[3]{rac{4x+1}{1-4x}}, ext{ for } & x
eq 0 \ e^6, ext{ for } & x=0 \end{array}
ight.$$
 , then at $x=0$

A. f is continuous if $f(0) = e^{-8}$

B. f is continuous

C. f has irremovable discontinuity

D. f has removable discontinuity

Answer: D



Watch Video Solution

61. If f(x) is continuous at x=0, where

$$f(x)=\left(rac{4-3x}{4+5x}
ight)^{rac{1}{x}}, ext{for} \;\; x
eq 0$$
 , then $f(0)=$

A. e^2

 $B.e^{-2}$

 $C.e^{-3}$

D. e^5

Answer: B



Watch Video Solution

62. If f(x) is continuous at x=2, where $f(x)=(x-1)^{\frac{1}{2-x}}$, for x
eq 2, then f(2) =

B.
$$\frac{1}{e}$$

A. $\frac{-1}{e}$

 $\mathsf{C}.-e$

D. None of these

Answer: B



Watch Video Solution

- **63.** If f(x) is continuous at x=0, where

 $f(x)=\left\{egin{array}{l} \left(\sec^2x
ight)^{\cot^2x}, ext{for} \;\; x
eq 0 \ k, \; ext{for} \;\; x=0 \end{array}
ight.$ then k=

A. $\frac{1}{e}$

B. $\frac{2}{e}$

C. e

D. None of these

64. If
$$f(x)$$
 is continuous at $x=rac{\pi}{4}$, where $f(x)=(1+\cos 2x)^{4\sec 2x}$, for $x
eqrac{\pi}{4}$, then $f\Big(rac{\pi}{4}\Big)=$

A.
$$e^{\,-4}$$

B. e^4

 $\mathsf{C.}\,4e$

D. e

Answer: B



Watch Video Solution

65. In order that the function $f(x) = (x+1)^{\cot x}$ is continuous at x = 0, f(0) must be defined as

A.
$$f(0) = 0$$

$$\mathsf{B.}\,f(0)=e$$

$$\mathsf{C.}\,f(0)=rac{1}{e}$$
 $\mathsf{D.}\,f(0)=rac{2}{e}$

Answer: B



Watch Video Solution

66.
$$f(x)=\begin{cases} \left(\tan\frac{\pi}{4}+x\right)^{1/x},& x\neq 0\\ k,& x=0 \end{cases}$$
 for what value of k, f(x) is continuous at x = 0 ?

- A. e
- B. e^{-1}
- $\mathsf{C}.\,e^2$
- D. e^{-2}

Answer: C



67. The function $f(x)=\left(\sin 2x\right)^{\tan^2 2x}$ is not defined at $x=rac{\pi}{4}.$ The value of $f(\pi/4)$, so that f is continuous at $x=\pi/4$, is

A.
$$\frac{1}{\sqrt{e}}$$

$$\mathrm{B.}\,\frac{-1}{\sqrt{e}}$$

C.
$$\sqrt{e}$$

D. e^{-2}

Answer: A



Watch Video Solution

68. If f(x) is continuous at x=1, where $f(x)=(\log_2 2x)^{\frac{1}{\log_2 x}}$, for x
eq 1, then f(1) =

A. 0

B. 1

C. e

D. None of these

Answer: C



Watch Video Solution

69. If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} rac{8^x-2^x}{k^x-1}, & ext{for} & x
eq 0 \ 2, & ext{for} & x=0 \end{array}
ight.$

then k =

A. 4

B. -2

C. 2

D. None of these

Answer: C



70. If f(x) is continuous at x=0, where $f(x)=\dfrac{4^x-e^x}{6^x-1}$, for x
eq 0,

then f(0) =

$$A. \frac{\log 4 - 1}{\log 6}$$

$$\mathsf{B.}\,\frac{1-\log 4}{\log 6}$$

$$\mathsf{C.}\,\frac{\log 2 - 2}{\log 6}$$

D.
$$\frac{2 - \log 2}{\log 6}$$

Answer: A



Watch Video Solution

71. The value of f at x =0 so that funcation $f(x)=\frac{2^x-2^{-x}}{x}, x \neq 0$ is continuous at x =0 is

A. 0

B. e^4

 $\mathsf{C}.\log 4$

Answer: C



Watch Video Solution

72. If the function f(x) defined by $f(x)=\left\{rac{\log(1+ax)-\log(1-bx)}{x}, \quad ext{if} \quad x
eq 0
ight.$

is continuous at
$$x=0$$
 , find k .

A.
$$\log a + \log b$$

B.
$$\log a - \log b$$

D.
$$a-b$$

 $\mathsf{C}.\,a+b$

Answer: C



73. If f(x) is continuous at x=0, where

by

$$f(x) = rac{\log 100 + \log (0.01 + x)}{3x}$$
 , for $x
eq 0$, then $f(0) =$

A. $\frac{10}{3}$

 $\mathsf{B.}\ \frac{100}{3}$

C. $\frac{1}{3}$ D. 100

Answer: B



Watch Video Solution

74. For what value of k , the function defined $f(x)=rac{\log(1+2x)\sin x^0}{x^2}$ for x
eq 0

= K for x = 0

is continuous at x=0?

A. 1

D. -2

B. -1

C. 2

Answer: B

Watch Video Solution

75. If $f(x)=egin{cases} \log_{(1-3x)}(1+3x), & ext{for} & x
eq 0 \\ k, & ext{for} & x=0 \end{cases}$ is continuous at x = 0,

B. 1

then k is equal to

C. 3

D. -3

Answer: A

76. If
$$f(x)$$
 is continuous at $x=7$, where $f(x)=\dfrac{\log x-\log 7}{x-7}$, for $x\neq 7$, then $f(7)=$

B. 7

$$\mathsf{C.}\ \frac{1}{14}$$

D. $\frac{1}{7}$

Answer: D



Watch Video Solution

77. If f(x) is continuous at x=0, where $f(x)=rac{e^{5x}-e^{2x}}{\sin 3x}$, for x
eq 0then f(0) =

A. 1

B. -1

C. 3

D. None of these

Answer: A



Watch Video Solution

78. Let $f(x)=rac{\left(e^{kx}-1
ight).\sin Kx}{x^2}$ for x
eq 0;=4, for x=0 is

continuous at x=0 then k

A. 4

B. -2

C. 2

D. ± 2

Answer: D



79. If f(x) is continuous at x=0, where $f(x)=\dfrac{\left(e^{2x}-1
ight) an x}{x\sin x}$, for $x \neq 0$, then f(0) =

80. If f(x) is continuous at x=0, where $f(x)=rac{\left(e^{3x}-1
ight)\sin x^{\circ}}{x^{2}}$, for

A.
$$\frac{1}{2}$$

$$\operatorname{B.}\frac{-1}{2}$$

Answer: C



$$x
eq 0$$
, then $f(0) = \pi$

A.
$$\frac{\pi}{180}$$

$$\mathsf{B.}\;\frac{\pi}{60}$$

$$\mathsf{C.}\,\frac{\pi}{90}$$

Answer: B



Watch Video Solution

81. if $f(x)=rac{e^{x^2}-\cos x}{x^2}$, for x
eq 0 is continuous at x=0 , then value of

f(0) is

 $\mathsf{A.}\;\frac{3}{2}$

 $\mathsf{B.}\;\frac{1}{2}$

C. 1

D. $\frac{-1}{2}$

Answer: A



82. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\left\{egin{array}{c} rac{3^x-3^{-x}}{\sin x}, & ext{for} & x
eq 0, \\ k, & ext{for} & x=0. \end{array}
ight.$

83. If f(x) is continuous at x=0, where $f(x)=\left\{\begin{array}{l} \frac{9^x-9^{-x}}{\sin x}, \ \text{for} \quad x\neq 0 \\ k, \ \text{for} \quad x=0 \end{array}\right.$

then k=

B. log 3

C. log 1

D. log e

Answer: A



Watch Video Solution

then k=

A. log 9

B. log 81

C. 2 log 3

D. $(\log 9)^2$

Answer: B



Watch Video Solution

84. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{10^x+7^x-14^x-5^x}{1-\cos 4x}$,

for $x \neq 0$, then f(0) =

A.
$$\frac{1}{4}(\log 2)\log\left(\frac{5}{7}\right)$$

$$\mathsf{B.}\,\frac{1}{8}(\log 2)\!\log\!\left(\frac{5}{7}\right)$$

$$\mathsf{C.}\ \frac{1}{4}(\log 2)\log\left(\frac{7}{5}\right)$$

D. None of these

Answer: B



85. If f(x) is continuous at x=0, where $f(x)=\frac{(5^x-2^x)x}{\cos 5x-\cos \frac{2x}{x}}$, for

$$x
eq 0$$
, then $f(0) =$

A.
$$\frac{-1}{4}\log\left(\frac{2}{5}\right)$$

B.
$$\frac{1}{4}\log\left(\frac{2}{5}\right)$$
C. $\frac{-1}{8}\log\left(\frac{2}{5}\right)$

D.
$$\frac{1}{8}\log\left(\frac{2}{5}\right)$$

Answer: D



Watch Video Solution

86. If f(x) is continuous at x=0, where $f(x)=\displaystyle\frac{4^x-2^{x+1}+1}{1-\cos x}$, for $x \neq 0$, then f(0) =

A.
$$(2\log 2)^2$$

$$\mathsf{B.}\,2(\log 2)^2$$

$$\mathsf{C.} \left(\log 2\right)^2$$

D.
$$\frac{\left(\log 2\right)^2}{2}$$

Answer: B



Watch Video Solution

87. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{2}$, where $f(x)=\frac{3^{x-\frac{\pi}{2}}-6^{x-\frac{\pi}{2}}}{\cos x}$, for $x
eq \frac{\pi}{2}$, then $f\Big(\frac{\pi}{2}\Big)=$

A. log 3

B. log 6

C. log 2

D. log 18

Answer: C



88. If f(x) is continuous at x=a, a>0, where $f(x)=\left\lceil \frac{a^x-x^a}{x^x-a^a}
ight
vert$, for

$$x
eq a$$
, -1 for x=a, then $a =$

A. e

B. 2e

C. 1

D. 0

Answer: C



Watch Video Solution

89. The function f(x) is conditions at the point x=0 where

$$f(x) = \frac{\log(1+kx)}{\sin x},$$
 for $x \neq 0$

= 5 for x=0 then value of k is

A. 5

B. -5

C.
$$\frac{1}{5}$$
D. $\frac{-1}{5}$

Answer: A



Watch Video Solution

90. For what value of k, the function defined by

$$f(x) = \left\{ egin{array}{ll} rac{\log\left(1+2x
ight)\sin x^{\circ}}{x^{2}}, & ext{for} & x
eq 0 \ k, & ext{for} & x = 0 \end{array}
ight.$$

is continuous at x = 0?

B.
$$\frac{1}{2}$$

$$\mathsf{C.}\,\frac{\pi}{90}$$

D.
$$\frac{90}{\pi}$$

Answer: C



91. If f(x) is continuous at x=0, where $f(x)=\dfrac{\log \sec^2 x}{x \sin x}$, for x
eq 0

A. e

then f(0) =

 $B.\pm 1$

 $\mathsf{C.}-1$

D. 1

Answer: D



Watch Video Solution

92. If f(x) is continuous at x=0, where $f(x)=rac{\log \left(1+x^2\right)-\log \left(1-x^2\right)}{\sec x-\cos x}$, for x
eq 0, then f(0)=

A. 0

B. 2

C. 1

D. -1

Answer: B



Watch Video Solution

93. If f(x) is continuous at x=0, where

$$f(x)=rac{\logig(1+x+x^2ig)+\logig(1-x+x^2ig)}{\sin x}$$
 , for $x
eq 0$, then $f(0)=$

A. 0

B. 2

C. 1

D. -1

Answer: A



94. If
$$f(x)$$
 is continuous at $x=0$, where $\log(2+x)-\log(2-x)$

$$f(x) = rac{\log(2+x) - \log(2-x)}{ an x}$$
 , for $x
eq 0$, then $f(0) =$

A.
$$\frac{1}{4}$$
B. $\frac{1}{2}$

Answer: D



Watch Video Solution

- find f(0).
 - A. 1
 - B. 3

95. If f(x) is continous at x=0, where $f(x) \frac{\left(e^{3x}-1\right)\sin x}{x\log(1+x)}$, for $x \neq 0$,

D.
$$\frac{1}{3}$$

Answer: B



Watch Video Solution

96. If
$$f(x)=rac{\left(8^x-1
ight)^2}{\sin x \log \left(1+rac{x}{4}
ight)}$$
 in $[-1,1]-\{0\}$, then for removable

discontinuity of f at x=0, f(0)=

B. 8 log 2

 $\mathsf{C.}\,4{(\log 8)}^2$

 $D.8(\log 2)^2$

Answer: C



View Text Solution

97. If the function $f(x)=rac{\left(4^{\sin x}-1
ight)^2}{x\cdot\log(1+2x)}$, for x
eq 0 is continuous at

A.
$$\frac{1}{4}(\log 4)^2$$

x=0, find f(0).

$$\mathsf{B.}\; \frac{1}{2}(\log 4)^2$$

$$\mathsf{C.}\, 2(\log 4)^2$$

$$\mathsf{D.}\ 2(\log 2)^2$$

Answer: D



98. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{\left(3^{\sin x}-1\right)^2}{x\log(1-x)}$, for $x
eq 0$, then $f(0)=$

A.
$$(\log 3)^2$$

$$\mathsf{C.}\ \frac{1}{2}\ \mathsf{log}\ \mathsf{3}$$

D. log 3

Answer: A



Watch Video Solution

A. 1

 $B. \pm 2$

C. 2

D. -2

Answer: B

Watch Video Solution

99. If f(x) is continuous at x=0, where

 $f(x)=\left\{egin{array}{l} rac{\left(e^x-1
ight)^4}{\sin\left(rac{x^2}{k^2}
ight)\log\left(1+rac{x^2}{2}
ight)}, ext{ for } & x
eq 0 \ 8, ext{ for } & x=0 \end{array}
ight.$, then k=

100. If $f(x)=rac{e^x+e^{-x}-2}{x\sin x}$, for $x\in\left[rac{-\pi}{2},rac{\pi}{2}
ight]-\{0\}$, then for f to be continuous in $\left[rac{-\pi}{2},rac{\pi}{2}
ight],f(0)=$

$$\mathbf{A} - \mathbf{e}^2$$

B. e^2

C. 1

D. None of these

Answer: C



Watch Video Solution

101. The function defined by
$$f(x)=egin{cases} \left(1+ an^2\sqrt{x}
ight)^{rac{1}{2x}}, & ext{for} & x
eq 0 \ k, & ext{for} & x=0 \end{cases}$$
 , is continuous from right at point $x=0$, then $k=1$

A. e

B. e^2

 $C. e^{\frac{1}{2}}$

D. None of these

Answer: C



Watch Video Solution

102. The function defined by

$$f(x)=egin{cases} \left(x^2+e^{rac{1}{2-x}}
ight)^{-1}, & x
eq 2 \ k & , & x=2 \end{cases}$$
 is continuous from right at the point

x = 2, then k is equal to

A. 0

B. 4

c. $\frac{-1}{4}$

D. $\frac{1}{4}$

Answer: D



103. Is the function defined by $f(x) = x^2 - \sin x + 5$ continuous at

$$x = \pi$$
?

A. f is discontinuous

B. f is continuous

C.
$$\lim_{x o \pi^-} f(x) = \pi^2 - 5$$

D.
$$\lim_{x o\pi^+}f(x)=5-\pi^2$$

Answer: B



Watch Video Solution

104. If $f(x)=\left\{egin{array}{ll} x,\, {
m for} & 0\leq x<rac{1}{2} \ 1-x,\, {
m for} & rac{1}{2}\leq x<1 \end{array}
ight.$, then

A.
$$\lim_{x o rac{1^-}{2}}f(x)=rac{-1}{2}$$

B.
$$\lim_{x o rac{1^+}{2}}f(x)=rac{-1}{2}$$

C. f is continuous at $x=rac{1}{2}$

D. f is discontinuous at $x=rac{1}{2}$

Answer: C



Watch Video Solution

105. If
$$f(x) = \begin{cases} rac{x^2-9}{x-3}, & ext{for} \quad 0 < x < 3 \\ x+3, & ext{for} \quad 3 \leq x < 6 \end{cases}$$
 , then f is $rac{x^2-9}{x+3}, & ext{for} \quad 6 \leq x < 9$

A. continuous at $x=3,\,x=6$

B. discontinuous at $x=3,\,x=6$

C. continuous at x=6 and discontinuous at x=3

D. continuous at x=3 and discontinuous at x=6

Answer: D



106. If
$$f(x)=\left\{egin{array}{l} rac{\sin2x}{\sqrt{1-\cos2x}}, ext{ for } 0< x<rac{\pi}{2} \ rac{\cos x}{\pi-2x}, ext{ for } rac{\pi}{2}< x<\pi \end{array}
ight.$$
 , then

A. f is discontinuous at
$$x=rac{\pi}{2}$$

B. f is continuous at
$$x=rac{\pi}{2}$$

C.
$$\lim_{x o \frac{\pi^-}{2}} f(x) = \frac{1}{2}$$

D.
$$\lim_{x o rac{\pi^+}{2}} f(x) = 0$$

Answer: A



107. If
$$f(x)=\left\{ egin{array}{ll} x-1, & ext{for} & 1\leq x<2 \ 2x+3, & ext{for} & 2\leq x\leq 3 \end{array}
ight.$$
 , then at $x=2$

A.
$$\lim_{x \to 2^-} f(x) = 7$$

B.
$$\lim_{x \to 2^+} f(x) = 1$$

C. f has removable discontinuity at
$$x=2$$

D. f has irremovable discontinuity at
$$x=2$$

Answer: D



Watch Video Solution

108. If
$$f(x) = \left\{egin{array}{l} x\sin x, \, ext{for} & 0 < x \leq rac{\pi}{2} \ rac{\pi}{2} \sin(\pi+x), \, ext{for} & rac{\pi}{2} < x < \pi \end{array}
ight.$$
 , then

A.
$$f(x)$$
 is discontinuous at $x=rac{\pi}{2}$

B.
$$f(x)$$
 is continuous at $x=rac{\pi}{2}$

C.
$$f(x)$$
 is continuous at $x=0$

D.
$$f(x)$$
 is discontinuous at $x=0$

Answer: A



109. If
$$f(x)$$
 is continuous at $x=0$, where

$$f(x)=\left\{egin{array}{l} rac{\sin x}{x}+\cos x, ext{ for } & x>0 \ rac{4\left(1-\sqrt{1-x}
ight)}{x}, ext{ for } & x<0 \end{array}
ight.$$
 , then $f(0)=$

A. 2

B. -2

C. 4

D. None of these

Answer: A



Watch Video Solution

110. If
$$f(x)=\left\{egin{array}{ll} x+2, ext{if} & x\leq 4 \ x+4, ext{if} & x>4 \end{array}
ight.$$
 then

A.
$$\lim_{x o 4^+} f(x) = 6$$

B.
$$\lim_{x \to 4^-} f(x) = 8$$

D. f has irremovable discontinuity

Answer: D



111. If
$$f(x)=\left\{egin{array}{ll} 2x, ext{ if } & x<2 \ 2, ext{ if } & x=2 \ \end{array}
ight.$$
 , then $x^2, ext{ if } & x>2 \ \end{array}
ight.$

A.
$$\lim_{x\, o\,2^-}\,f(x)=\,-\,4$$

B.
$$\lim_{x \to 2^+} f(x) = -4$$

C. f has irremovable discontinuity

D. f has removable discontinuity

Answer: D



Watch Video Solution

112. If
$$f(x)= egin{cases} x-1, & ext{for} & 1 \leq x < 2 \ 2, & ext{for} & x=2 \ 2x-3, & ext{for} & 2 < x < 3 \end{cases}$$
 , then f has removable

discontinuity at x=2, if f(2)=

A. 2

B. 3

C. 1

D. -1

Answer: C



Watch Video Solution

113. If
$$f(x)=\left\{egin{array}{ll} x^2, \, {
m for} & x\leq 1 \ x+3, \, {
m for} & x>1 \end{array}
ight.$$
 , then at $x=1$

A.
$$\lim_{x o 1^-} f(x) = 4$$

B.
$$\lim_{x\,
ightarrow\,1^+}\,f(x)=1$$

C. f has removable discontinuity

D. f has irremovable discontinuity

Answer: D



114. If $f(x) = \sqrt{x-2}$, for 2 < x < 4, then f(x) is

A. continuous in (2, 4) except at x=3

B. discontinuous in (2, 4) except at x=3

C. discontinuous in (2, 4)

D. continuous in (2, 4)

Answer: D



Watch Video Solution

115. If
$$f(x) = \left\{ egin{array}{ll} 1 - x, & ext{for} & 0 < x \leq 1 \ rac{1}{2}, & ext{for} & x = 0 \end{array}
ight.$$
 , then in [0, 1]

A. f(x) is not continuous

B. f(x is continuous

C. f(x) is continuous at x=0

D. f(x) is continuous at x=1

Answer: A



Watch Video Solution

116. If
$$f(x)=\left\{egin{array}{ll} 3x+5, ext{ for } & 0\leq x<3 \ 2x+8, ext{ for } & 3\leq x<5 \ x+13, ext{ for } & 5\leq x\leq 10 \end{array}
ight.$$
 , then

- A. f(x) is discontinuous in its domain
- B. f(x) is continuous in its domain
- C. f(x) is continuous in its domain except at x=3
- D. f(x) is continuous in its domain except at x=5

Answer: B



117. If
$$f(x) = \left\{ egin{array}{l} rac{\sin x}{x}, ext{ for } & x < 0 \ x + 1, ext{ for } & x \geq 0 \end{array}
ight.$$
 , then

A. f is continuous on its domain

B. f is discontinuous on its domain

C. f is continuous on its domain except x=0

D. f is discontinuous on its domain except x=0

Answer: A



Watch Video Solution

118. If
$$f(x)=\left\{egin{array}{ll} rac{2x+5}{x+1}, & ext{for} & 0 \leq x < 2 \ 4x-5, & ext{for} & 2 \leq x \leq 4 \ rac{x^2+2}{x-5}, & ext{for} & 4 < x \leq 6, x
eq 5 \end{array}
ight.$$
 then

A. f is continuous on its domain

B. f is continuous on its domain except x=5

C. f is continuous on its domain except x=4

D. f is continuous on its domain except x=2

Answer: C

119. If
$$f(x)=\left\{egin{array}{l} rac{\sin2x}{\sqrt{1-\cos2x}}, ext{ for } \ 0< x\leqrac{\pi}{2} \ rac{\cos x}{\pi-2x}, ext{ for } \ rac{\pi}{2}< x\leq\pi \end{array}
ight.$$

A. f is continuous on its domain except $x=rac{\pi}{2}$

B. f is continuous on its domain

C. f is discontinuous on its domain

D. f is continuous on its domain except x=0

Answer: A



Watch Video Solution

120. If $f(x) = egin{cases} x, ext{ for } & 0 \leq x < 1 \ 2, ext{ for } & x = 1 \ x + 1, ext{ for } & 1 < x \leq 2 \end{cases}$, then f is

A. f is continuous at x=1

B. f is discontinuous at x=1

C.
$$\lim_{x \to 1^-} f(x) = 2$$

D.
$$\lim_{x o 1^+} f(x) = 1$$

Answer: B



Watch Video Solution

121. If $f(x) = \frac{x^3 + 3x + 5}{x^3 - 3x + 2}$ in [0, 5], then f is

A. continuous on its domain except at
$$x=1, x=\,-\,2$$

B. continuous on its domain except at x=1

C. continuous on its domain except at $x=\,-\,2$

D. continuous on its domain

Answer: B



122. If
$$f(x) = \frac{x+1}{(x-2)(x-5)}$$
, then in [4, 6]

A. f is discontinuous

B. f is continuous

C. f is continuous except at $x=2\,$

D. f is continuous except at x=5

Answer: D



Watch Video Solution

123. If $f(x) = \frac{x+1}{(x-2)(x-5)}$, then in [0, 1]

A. f is continuous

B. f is discontinuous

C. f is continuous except at x=0

D. f is continuous except at x=1



Watch Video Solution

124. If
$$f(x) = \left\{ egin{array}{ll} x, \, {
m for} & x \geq 0 \ x^2, \, {
m for} & x < 0 \end{array}
ight.$$
 , then f is

A. continuous on R except at x=0

B. continuous on R

C. discontinuous on R except at x=0

D. continuous on \mathbb{R}^+ only

Answer: B



125. If
$$f(x) = \left\{ egin{aligned} x^2 - 4, & ext{for} & 0 \leq x \leq 2 \ 2x + 3, & ext{for} & 2 < x \leq 4 \ , & ext{then} \ x^2 - 5, & ext{for} & 4 < x \leq 6 \end{aligned}
ight.$$

A. f is continuous on [0, 6]

B. f is discontinuous on [0, 6]

C. f is continuous on [0, 6] except at x=2

D. f is continuous on [0, 6] except at x=4

Answer: C



Watch Video Solution

126. If
$$f(x) = \begin{cases} rac{1}{x+1}, & \text{for} \quad 2 \leq x \leq 4 \\ rac{x+1}{x-3}, & \text{for} \quad 4 < x \leq 6 \end{cases}$$
 , then

A. f is discontinuous on [2, 6]

B. f is continuous on [2, 6]

C. f is continuous on [2, 6] except at x=3

D. f is continuous on [2, 6] except at x=4

Answer: D



127. If
$$f(x) = \left\{ egin{array}{ll} 3, ext{ if } & 0 \leq x \leq 1 \ 4, ext{ if } & 1 < x < 3 \ 5, ext{ if } & 3 \leq x \leq 10 \end{array}
ight.$$

A. f is continuous on [0, 10] except at x=1,3

B. f is continuous on [0, 10] except at x=1

C. f is continuous on [0, 10] except at x=3

D. f is continuous on [0, 10]

Answer: A



Watch Video Solution

128. If
$$f(x)=egin{cases} -2, ext{ for } & x\leq -1 \ 2x, ext{ for } & -1< x\leq 1 ext{ , then } \ 2, ext{ for } & x>1 \end{cases}$$

A. f is discontinuous on its domain

B. f is continuous on its domain

C. f is continuous on its domain except at x=-1

D. f is continuous on its domain except at x=1

Answer: B



Watch Video Solution

129.
$$f(x) = \left\{ egin{array}{ll} |x|+3, & ext{if} & x \leq -3 \ -2x, & ext{if} & -3 < x < 3 \ ext{is} \ 6x+2, & ext{if} & x \geq 3 \end{array}
ight.$$

A. f is continuous on its domain except at $x=\,-\,3$

B. f is continuous on its domain except at $x=3\,$

C. f is continuous on its domain except at $x=\,-\,3,\,3$

D. f is continuous on its domain

Answer: C



130. If
$$f(x) = \left\{ egin{array}{ll} 2x, \, {
m for} & x < 0 \ 2x + 1, \, {
m for} & x \geq 0 \end{array}
ight.$$
 , then

A. f(|x|) is continuous at x=0

B. f(x) is discontinuous at x=0

C. f(x) is continuous at x=0

D. f(|x|) is discontinuous at x=0

Answer: B



Watch Video Solution

131. Function $f(x) = \left\{ egin{array}{ll} x-1, & x<2 \\ 2x-3, & x>2 \end{array} ight.$ is a continuous function

A. for x = 2 only

B. for all real values of x

C. for all real values of x such that x
eq 2

D. for all integral values of x only

Answer: B



Watch Video Solution

132. If
$$f(x) = \frac{x^3 - 8}{x^2 + x - 20}$$
, then

A. f is continuous on R

B. f is continuous on R - (-5, 4)

C. f is continuous on R - {-5, 4}

D. f is continuous on R - [-5, 4]

Answer: C



Watch Video Solution

133. If
$$f(x)=\left\{egin{array}{l} rac{x^2-3x+2}{x-3}, \ {
m for} \quad 0\leq x<4 \ rac{x^2-1}{x-2}, \ {
m for} \quad 4\leq x\leq 6 \end{array}
ight.$$
 , then on [0, 6]

A. f is continuous except at x=2

B. f is continuous except at x=3

C. f is continuous except at x=4

D. f is continuous except at x = 3and x = 4

Answer: D



Watch Video Solution

134. If the function

 $=4x+3, {
m For}x\geq 1$

f(x) = k + x, For x < 1

is continous at x=1 then $k=\ldots\ldots$

A. 7

B. 8

C. 6

D. -6

Answer: C



Watch Video Solution

- **135.** If f(x) is continuous at x=0, where $f(x) = \left\{ egin{aligned} x^2+1, & ext{for} \quad x \geq 0 \ 2\sqrt{x^2+1}+k, & ext{for} \quad x < 0 \end{aligned}
 ight.$, then k =
 - A. 3
 - B. -2
 - C. -1
 - D. 1

Answer: C



136.

If f(x) is continuous at x=0, where

 $f(x)=\left\{egin{aligned} kig(x^2-2ig), & ext{for} & x\leq 0\ 4x+1, & ext{for} & x>0 \end{aligned}
ight.$, then k=

A. $\frac{1}{2}$

$$\mathsf{B.}\,\frac{-1}{2}$$

D. -2

C. 2

Answer: B



- **137.** If f is continuous at x=0 , where $f(x)=x^2+lpha$, $x\geq 0$,
- $f(x)=2\sqrt{x^2+1}+eta,x<0.$ Find lpha and eta given that $f\Bigl(rac{1}{2}\Bigr)=2$ A. $\alpha=rac{-1}{4}, eta=rac{7}{4}$
 - B. $\alpha = \frac{-7}{4}$, $\beta = \frac{1}{4}$

138. If $f(x) \frac{x^2 - 9}{x - 3} + \alpha$, for x > 3

is continous at x = 3, find α and β .

= 5, for x = 3

 $=2x^{2}+3x+\beta$, for x<3

A. $\alpha = -1$, $\beta = 22$

B. $\alpha = 1$, $\beta = -22$

D. $\alpha = 1, \beta = 22$

 $\mathsf{C.}\,\alpha = \,-\,1,\beta = \,-\,22$

Answer: D

 $\operatorname{C.}\alpha = \frac{1}{4}, \beta = \frac{-7}{4}$

D. $\alpha = \frac{7}{4}, \beta = \frac{-1}{4}$

Watch Video Solution



Answer: C

continuous, find the values of a and b

139. If the function
$$f(x)= egin{cases} 5, & x \leq 2 \ ax+b, & 2 < x \leq 10 \ 21, & x > 10 \end{cases}$$

A.
$$a=2, b=1$$

B.
$$a = -2, b = -1$$

C.
$$a = 2, b = -1$$

D.
$$a = -2, b = 1$$

Answer: A



Watch Video Solution

140. If f(x) is continuous at x=1, where $f(x)=\left\{ egin{align*} kx^2, & ext{for } x\geq 1 \\ 4, & ext{for } x<1 \end{array}
ight.$ then k=

B. 4

D.
$$\pm 2$$

Answer: B



Watch Video Solution

141. If
$$f(x)$$
 is continuous on
$$(x^2 + ax + 6, \text{ for } 0 \leq x < 2)$$

$$f(x) = \left\{egin{array}{ll} x^2+ax+6, ext{ for } & 0 \leq x < 2 \ 3x+2, ext{ for } & 2 \leq x \leq 4 \ 2ax+5b, ext{ for } & 4 < x \leq 8 \end{array}
ight.$$
 , then

[0, 8] , where

A.
$$a = -1, b = \frac{22}{5}$$

B.
$$a = -1, b = \frac{-8}{5}$$

C.
$$a = -1, b = \frac{-22}{5}$$

D.
$$a = 1, b = \frac{8}{5}$$

Answer: A



Watch Video Solution

142. If
$$f(x)$$
 is continuous in [0, 3], where $f(x)=egin{cases} 3x-4, \ \text{for} & 0\leq x\leq 2 \ 2x+k, \ \text{for} & 2< x\leq 3 \end{cases}$, then $k=$

Answer: D



Watch Video Solution

$$f(x) = \left\{ egin{array}{ll} 6, ext{for} & x \leq 2 \ ax+b, ext{for} & 2 < x < 10 ext{, then} \ 22, ext{for} & x \geq 10 \end{array}
ight.$$

143. If f(x) continuous on its

domain, where

$$\mathsf{A.}\,a=3,b=1$$

B.
$$a = 2, b = -1$$

C.
$$a = 3, b = -1$$

D.
$$a=2,b=2$$

Answer: D



Watch Video Solution

144. If f (x) is continuous on 0-4,2], defined as

$$f(x)=6b-3ax, ext{for}-4\leq x<-2$$

$$=4x+1, \text{ for } -2 \leq x \leq 2,$$

find the value of a + b.

A.
$$\frac{7}{6}$$

B.
$$\frac{-7}{6}$$

$$\mathsf{C.}\,\frac{9}{2}$$

$$\text{D.}\,\frac{-9}{2}$$

Answer: B



Watch Video Solution

145. If f(x) is continuous at x=3, then $f(x)=ax+1, \qquad ext{ for x } \leq 3$

$$=bx+3$$
, for x > 3 then

A.
$$a+b=rac{2}{3}$$

$$\operatorname{B.} a + b = \frac{-2}{3}$$

$$\mathsf{C.}\,a-b=\frac{2}{3}$$

$$\mathsf{D.}\,a-b=\frac{-2}{3}$$

Answer: C



146. If
$$f(x)$$
 is continuous in [-2, 2], where $f(x)= \begin{cases} x+a, \ {
m for} \quad x<0 \\ x, \ {
m for} \quad 0\leq x<1 \ , \\ b-x, \ {
m for} \quad x\geq 1 \end{cases}$ then $a+b=$

C.
$$\pm 2$$

Answer: D



147.

Watch Video Solution

147. If
$$f(x)=igg\{rac{\sqrt{1+kx}-\sqrt{1-kx}}{x}$$
 for $1\leq x<0$ and $2x^2+3x-2f$ or $0\leq x\leq 1$ is continuous at $x-0$ then k

for

B. -2

C. -3

D. -4

Answer: B



Watch Video Solution

148. If the function $f\!:\!R o R$ given by

$$f(x)=egin{cases} x+a, & ext{if} \ \ x\leq 1 \ 3-x^2, & ext{if} \ \ x>1 \end{cases}$$
 is continuous at x = 1, then a is equal to

A. 2

B. 1

C. 4

D. 3

Answer: B



149. If
$$f(x)=egin{cases} ax^2-b, & ext{for} & 0\leq x<1 \ 2, & ext{for} & x=1 \ x+1, & ext{for} & 1< x\leq 2 \end{cases}$$
 is continuous at $x=1$, then

the most suitable values of a, b are

A.
$$a = 2, b = -2$$

B.
$$a = -1, b = -1$$

C.
$$a = 1, b = 1$$

D.
$$a = 1, b = -1$$

Answer: D



Watch Video Solution

150. If the derivative of the function $f(x)=\left\{ax^2+b,x<-1 ext{ and } bx^2+ax+4,x\leq -1 ext{ is everywhere}
ight.$ continuous, then-

$$\mathsf{A.}\,a=3,b=2$$

B.
$$a = 2, b = 3$$

C.
$$a = -2, b = -3$$

D.
$$a = -3, b = -2$$

Answer: B



Watch Video Solution

151. If f(x) is continuous at x=2, where $f(x)=\left\{ egin{align*} 4x-3, & ext{for} & x<2 \ kx+7, & ext{for} & x>2 \ \end{array} ight.$ then k =

A. -1

B. 1

C. -6

D. 6

Answer: A



152. If
$$f(x)$$
 is continuous at $x=0$, where

$$f(x)=\left\{egin{aligned} rac{1-\cos4x}{x^2}, & ext{for} \quad x<0 \ k, & ext{for} \quad x=0 \ rac{\sqrt{x}}{\sqrt{16+\sqrt{x}}-4}, & ext{for} \quad x>0 \end{aligned}
ight.$$
 , then $k=$

A. 2

B. 0

C. 4

D. 8

Answer: D



153. If
$$f(x)$$
 is continuous at $x=0$, where

$$f(x)=\left\{egin{array}{l} rac{\sin 4x}{5x}+a, ext{for} & x>0 \ x+4-b, ext{for} & x<0 ext{ , then} \ 1, ext{for} & x=0 \end{array}
ight.$$

A.
$$a = \frac{1}{5}, b = 3$$

B.
$$a=rac{-1}{5}, b=-3$$
C. $a=rac{1}{5}, b=-3$

D.
$$a=rac{-1}{5},b=3$$

Answer: A

Watch Video Solution

$$\sin \pi i$$

$$(x) = \frac{\sin}{x}$$

$$(x) = \frac{1}{x}$$

$$x - f_{or}$$

for
$$x=$$

$$x - x = 2\pi, \quad ext{for} \quad x = 1$$

$$-rac{}{x-}$$

$$\frac{\sin nx}{x-1}$$

is continuous at x = 1, find a and b

A. $a = \pi, b = \frac{3\pi}{2}$

B. $a = 3\pi, b = \frac{3\pi}{2}$

C. $a = \pi, b = \frac{5\pi}{2}$

D. $a = 3\pi, b = \frac{5\pi}{2}$

154. If
$$f(x) = \frac{\sin \pi x}{x-1} + a$$
, for $x < 1$

 $=rac{1+\cos\pi x}{\pi}(1-x)^2+b, \ \ ext{for} x>1$

Answer: B



Watch Video Solution

155. Let $f(x)=\left\{ egin{array}{cccc} \sin 2x & 0 < x \leq x\pi/6 \\ ax+b & \pi/6 < x < 1 \end{array}
ight.$ If f(x) and f'(x) are continuous, then

A.
$$a=\ -2, b=rac{\sqrt{3}}{2}+rac{\pi}{3}$$

B.
$$a = 2, b = \frac{\sqrt{3}}{2} - \frac{\pi}{3}$$

C.
$$a = -1, b = \frac{\sqrt{3}}{2} + \frac{\pi}{6}$$

D.
$$a=1,b=rac{\sqrt{3}}{2}-rac{\pi}{6}$$

Answer: D



Determine the values of a,b,c for which the function $(\sin(a+1)x + \sin x) = \sqrt{x+bx^2} = \sqrt{x}$

$$f(x)=\left\{rac{\sin(a+1)x+\sin x}{xc,f\otimes \ =0},f ext{ or }x<0rac{\sqrt{x+bx^2}-\sqrt{x}}{bx^{rac{3}{2}}},f ext{ or }x>0is
ight.$$

A.
$$a = -2$$
. $b = 0$. $c = 0$

C.
$$a=-2, b
eq 0, c=0$$

B. a = -2, b = R, c = 0

D.
$$a=-2,b=0,c
eq 0$$

Answer: C



Determine the values of a,b,c for which the function

$$f(x)=\left\{rac{\sin(a+1)x+\sin x}{xc,f\otimes \ =0},f ext{ or }x<0rac{\sqrt{x+bx^2}-\sqrt{x}}{bx^{rac{3}{2}}},f ext{ or }x>0is
ight.$$

A.
$$a = -2, b = R, c = 0$$

B.
$$a=-2, b
eq 0, c=0$$

D.
$$a=rac{-3}{2}, b=R-\{0\}, c=rac{1}{2}$$

C. $a = \frac{-3}{2}$, b = R, $c = \frac{1}{2}$

Answer: D



Watch Video Solution

158. If
$$f(x)$$
 is continuous on [-2, $f(x)= egin{cases} rac{\sin ax}{x}+2, & ext{for} & -2 \leq x < 0 \\ 3x+5, & ext{for} & 0 \leq x \leq 1 \\ \sqrt{x^2+8}-b, & ext{for} & 1 < x < 2 \end{cases}$, then $a+b=$

A. -15

B. O

C. 2

D. -2

158. If f(x) is continuous on [-2, 2], where



Answer: D

159. Find the values of a and b so that the function

$$f(x) = egin{cases} x + a\sqrt{2}\sin x, & 0 \leq x \leq \pi/4 \ 2x\cot x + b, & \pi/4 \leq x \leq \pi/2 \ a\cot 2x - b\sin x, & \pi/2 < x \leq \pi \end{cases}$$

is continuous for $0 \le x \le \pi$.

A.
$$a = \frac{-\pi}{6}, b = \frac{\pi}{12}$$

$$\mathrm{B.}\,a=\frac{\pi}{6},b=\frac{-\pi}{12}$$

C.
$$a=rac{-\pi}{6}, b=rac{-\pi}{12}$$

D.
$$a = \frac{\pi}{6}, b = \frac{\pi}{12}$$

Answer: B



Watch Video Solution

160. Let $f(x)=egin{cases} -2\sin x & ext{for } -\pi \leq x \leq -rac{\pi}{2} \ a\sin x + b & ext{for } -rac{\pi}{2} < x < rac{\pi}{2} \ \cos x & ext{for } rac{\pi}{2} \leq x \leq \pi \end{cases}$. If f is continuous

on $[-\pi,\pi)$, then find the values of a and b.

A.
$$\alpha=1,\beta=1$$

$$\mathtt{B.}\,\alpha=\,-\,1,\beta=\,-\,1$$

$$\mathsf{C}.\,\alpha=\,-\,1,\,\beta=\,1$$

D.
$$\alpha = 1, \beta = -1$$

Answer: C



Watch Video Solution

161. If the function f(x) is continuous in the interval [-2,2]. find the

values of a and b where

$$f(x) = rac{\sin x}{x} - 2$$
 ,for $-2 \le x < 0$
= $2x + 1$,for $0 < x < 1$

$$= 2b\sqrt{x^2 + 3} - 1$$
 , for $1 < x \le 2$

Answer: C



Watch Video Solution

162. If f(x) is continuous in $(-\infty,6)$, where

$$f(x) = egin{cases} 1+\sin\Bigl(rac{\pi x}{2}\Bigr), & ext{for} & -\infty < x \leq 1 \ ax+b, & ext{for} & 1 < x < 3 \ 6 an\Bigl(rac{\pi x}{12}\Bigr), & ext{for} & 3 \leq x < 6 \end{cases}$$
 , then

A.
$$a = 2, b = 0$$

B.
$$a = 0, b = 2$$

$$C. a = 1, b = 1$$

D.
$$a = 2, b = 1$$

Answer: A



163. If
$$f(x)=\left\{egin{array}{ll} ax+1, & x\leqrac{\pi}{2} \ \sin x+b, & x>rac{\pi}{2} \end{array}
ight.$$
 is continuous, then

A.
$$rac{a\pi}{2}=b$$

B.
$$rac{b\pi}{2}=a_a$$

C.
$$a=b=rac{\pi}{2}$$

D.
$$a=b=rac{\pi}{2}+1$$

Answer: A



Watch Video Solution

164. If
$$f(x)=\left\{egin{array}{l} rac{e^{rac{1}{x}}-1}{e^{rac{1}{x}}+1}, ext{ for } & x
eq 0 \ 1, ext{ for } & x=0 \end{array}
ight.$$
 , then f is

A. continuous at x=0

B. discontinuous at x=0

C. continuous if f(0) = -1

D. discontinuous if f(0) = -1

Answer: B



Watch Video Solution

165. If f(x) is continuous at x=0, where f(x) $\begin{cases} rac{1}{1+e^{rac{1}{x}}}, ext{ for } x
eq 0 \\ k, ext{ for } x=0 \end{cases}$, then

k =

A. 1

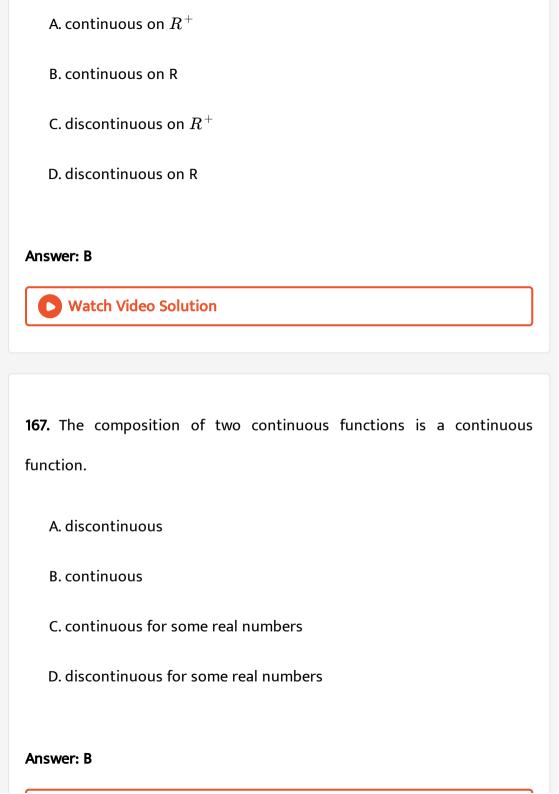
B. 0

C. -1

D. does not exists

Answer: D





168. If
$$f(x) = \sin x$$
, then f is

A. discontinuous for all
$$x \in R$$

B. continuous for all
$$x \in R^+$$

C. continuous for all
$$x \in R^-$$

D. continuous for all
$$x \in R$$

Answer: D



169. If $f(x) = \sin x^2$, then f is

A. continuous for all
$$x \in R$$

B. discontinuous for all
$$x \in R$$

C. continuous for only
$$x \in R^+$$

D. continuous for only $x \in R^-$

Answer: A



Watch Video Solution

170. If $f(x)=a^x,\,a>0$, then f is

A. continuous for all $x \in R^+$

B. continuous for all $x \in R^-$

C. continuous for all $x \in R$

D. discontinuous for all $x \in R$

Answer: C



Watch Video Solution

171. Discuss the continuity of the function $\log_c x, ext{ where } c>0, x>0.$

A. continuous in $(-\infty, \infty)$

B. continuous in $(0, \infty)$

C. discontinuous in $(-\infty, \infty)$

D. discontinuous in $(0, \infty)$

Answer: B



Watch Video Solution

172. The rational function $f(x)=rac{g(x)}{h(x)},$ h(x) eq 0 is

A. continuous

B. discontinuous for integer values only

C. continuous for integer values only

D. continuous for imaginary values only

Answer: A



173. The function f(x) = |x| is

A. continuous on R

B. discontinuous on R

C. continuous on only $R^{\,+}$

D. discontinuous only $R^{\,+}$

Answer: A



Watch Video Solution

174. The function $f(x) = [\cos x]$ is

A. continuous on R

B. discontinuous on R

C. continuous on only $R^{\,+}$

D. discontinuous only $R^{\,+}$

Answer: A



Watch Video Solution

175. If f(x) = |x|, then at x = 0

A. discontinuous

B. continuous

C. $\lim_{x \to 0} f(x) = 1$

D. $\lim_{x o 0} f(x) = -1$

Answer: B



176. If f(x) is continuous at x=3, where $f(x)=\left\{egin{array}{l} |x-3|,\, {
m for} & x
eq 3 \\ k,\, {
m for} & x=3 \end{array}
ight.$, then k =

177. If f(x) = [x], where [x] is the greatest integer not greater than x, in

A. 1

B. 0

C. -1

D. does not exist

Answer: B



Watch Video Solution

(-4, 4), then f(x) is

A. discontinuous at x=0, only in (-4, 4)

B. continuous at x=0 only in (-4,4)

C. discontinuous at every integral point of (-4,4)

D. continuous at every integral point of (-4,4)

Answer: C



Watch Video Solution

178. If f(x) = |(1+x)|x|, then f is

A. discontinuous for all $x \in R$

B. continuous for all $x \in R$

C. continuous for all $x \in R^+$

D. continuous for all $x \in R^-$

Answer: B



A. f is continuous except at x=0

B. f is continuous except at x=1

Answer: C

C. f is continuous

Watch Video Solution

 $\mathsf{B.}\,x\in(\,-\infty,\infty)-\{0\}$

Watch Video Solution

 $\mathsf{C}.\,x\in(\,-\infty,\infty)$

D. no values of x

Answer: C

A. only x>0

D. f is discontinuous

180. The function f(x) = x + |x| is continuous for

181. The function $f(x) = |x| \, orall x \in R$ is

A. continuous for all $x \in R^-$

B. continuous for all $x \in R^+$

C. continuous for all $x \in R$

D. discontinuous for all $x \in R$

Answer: C



Watch Video Solution

182. If f(x) = 2x - |x|, then at x = 0

A. f is continuous

B. f is discontinuous

C. $\lim_{x
ightarrow0^{-}}f(x)=3$

D.
$$\lim_{x \to 0^+} f(x) = 1$$

Answer: A



Watch Video Solution

183. If
$$f(x)=\left\{egin{array}{l} rac{x}{|x|}, ext{ for } & x
eq 0 \ c, ext{ for } & x=0 \end{array}
ight.$$
 , then f is

A. continuous at
$$x=0$$

C. continuous if
$$f(0)=1$$

B. discontinuous at x=0

D. continuous if
$$f(0) = -1$$

Answer: B



Watch Video Solution

184. If $f(x)=\left\{egin{array}{l} rac{|x|}{x}, ext{for} & x
eq 0 \ 1, ext{for} & x=0 \end{array}
ight.$, then

$$f(x) =$$

A. $\lim_{x
ightarrow 1^-} f(x) = 1$

B.
$$\lim_{x \to 1^+} f(x) = -1$$

C. f is discontinuous at origin

D. f is continuous at origin

Answer: C



View Text Solution

 $\lim_{x\, o\,3^-}\,f(x)=$

185. If $f\!:\!R o R$ is defined bu f(x)=[x-3]+|x-4| for $x\in R$, then

A. 0

B. -1

C. -2

D. 1

Answer: A

186. If
$$f(x)=\left\{egin{array}{l} rac{\cot x-\cos x}{\left(\pi-2x
ight)^3},\ ext{for}\quad x
eq rac{\pi}{2} \\ k,\ ext{for}\quad x=rac{\pi}{2} \end{array}
ight.$$
 is continuous at $x=rac{\pi}{2}$, where ,

then k =

A.
$$\frac{1}{4}$$

$$\mathsf{B.}\;\frac{1}{24}$$

C.
$$\frac{1}{16}$$

D. None of these

Answer: C



Watch Video Solution

187. If $f(x) = \log (\sec^2 x)^{\cot 2}$ for x
eq 0 for x=0 is continuous at x=0, then

K is

A. e^{-1}

B. 1

C. e

D. 0

Answer: B



Watch Video Solution

188. The function $f(x)=rac{2x^2+7}{x^3+3x^2-x-3}$ is discontinuous for

A. x=1 only

B. x=1,-1 only

C. $x=1,\;-1,\;-3$ and other values of x

D. x = 1, -1, -3 only

Answer: D



189. If f(u) $= \frac{1}{u^2 + u - 2}$, where $u = \frac{1}{x - 1}$, then the points of

A.
$$x = 2, \frac{1}{2}$$

$$\operatorname{B.} x = 1, 2, \frac{1}{2}$$

$$\mathsf{C.}\,x=2,\frac{-1}{2}$$

D.
$$z = 1, 2, \frac{-1}{2}$$

Answer: B



- **190.** If f(x) is continuous at x=3, where $f(x)=rac{x^2-7x+12}{x^2-5x+6}$, for $x \neq 3$, then f(3) =
 - A. -1
 - B. 1
 - c. $\frac{1}{5}$

D.
$$\frac{7}{5}$$

Answer: A



Watch Video Solution

- **191.** If f(x) is continuous for all x, where $f(x)=\left\{egin{array}{c} rac{x^2-7x+12}{(x-2)^2}, ext{ for } & x
 eq 2 \\ k, ext{ for } x=2 \end{array}
 ight.$
- , then k=
 - A. 7
 - B. -7
 - $\mathsf{C}.\pm7$
 - D. 14

Answer: A



A. 2

B. -1

C. 1

D. 0

Answer: D

$$\int \frac{x^2-(x^2-(x^2-x^2))^2}{x^2-(x^2-x^2)^2}$$

$$x^2 - ($$

$$\int \frac{x^2 - (a+2)x + a}{x-2}, 1$$

$$\int \frac{x^2 - (a+2)}{x^2}$$

$$f(x)$$
 is $x^2-\left(\,a+2\,
ight)x+a$

$$\int \frac{x^2 - (a+2)x + a}{x^2 - (a+2)x}, \text{ for } x$$

If
$$f(x)$$
 is
$$\int \frac{x^2 - (a+2)x + a}{x^2 - (a+2)x + a} for$$

$$f(x)=\left\{ egin{array}{ll} rac{x^2-\left(\,a+2\,
ight)\,x+a}{x-2},\, {
m for} & x
eq 2 \ 2,\, {
m for} & x=2 \end{array}
ight.$$
 , then $a=$

$$\int \frac{x^2 - (a+2)x}{x-2}$$

Watch Video Solution

for $x \neq 2$, then f(2) =

f
$$f(x)$$
 IS $x^2-(a+2)x+a$ $x=a$

192. If
$$f(x)$$
 is continuous at $x=2$, where

$$f(x)$$
 is $x^2-\left(a+2
ight)x+a$

) IS
$$2)x+a$$
 c

193. If f(x) is continuous at x=2, where $f(x)=\dfrac{\left(x^2-x-2\right)^{20}}{\left(x^3-12x+16\right)^{10}}$,

C.
$$\left(\frac{3}{2}\right)^{10}$$
D. $\left(\frac{3}{2}\right)^{20}$

Answer: C



Watch Video Solution

f(-2) =

If
$$f(x)$$

If
$$f(x)$$
 is

Watch Video Solution

If
$$f(x)$$
 is

194. If
$$f(x)$$
 is continuous at $x=-2$, where 2

194. If
$$f(x)$$
 is continuous at $x=-2$, where $f(x)=rac{2}{x+2}+rac{1}{x^2-2x+4}-rac{24}{x^3+8}$, for $x
eq -2$, then



B. $\frac{1}{4}$

c. $\frac{11}{12}$

D. $\frac{-11}{12}$

Answer: D

195. If
$$f(x)$$
 is continuous at $x=1$, where $f(x)=\dfrac{x^n-1}{x-1}$, for $x \neq 1$, then $f(1)=$

A.
$$\frac{1}{n}$$

B.
$$\frac{1}{n(n-1)}$$

D.
$$n(n-1)$$

Answer: C



Watch Video Solution

f(x) is continuous at x=1, where 196. $f(x)=\left(rac{x+3x^2+5x^3+...+(2n-1)x^n-n^2}{x-1}
ight)$, for x
eq 1, then f(1) =

A.
$$\frac{n(n+1)(2n-1)}{6}$$

C. -6
D.
$$\frac{1}{6}$$

B. $\frac{n(n+1)(2n-1)}{3}$

c. $\frac{n(n+1)(4n-1)}{6}$

D. $\frac{n(n+1)(4n-1)}{3}$

Watch Video Solution

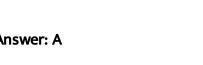
197. If f(x) is continuous at x=3, where $f(x)=\left\{egin{array}{c} rac{x^2-9}{x-3} & , ext{for} x
eq 3 \ 2x+k & , ext{otherwise} \end{array}
ight.$

Answer: C

, then k=

A. 0

B. 3





Answer: A

198. If f(x) is continuous at x=16, where

$$f(x)=\left\{egin{array}{c} rac{x^8-\left(256
ight)^4}{x^4-\left(16
ight)^4}, ext{for} x
eq 16 \ k, ext{for} x=16 \end{array}
ight.$$
 , then $k=$

A.
$$(16)^4$$

B.
$$2(16)^4$$

C.
$$4(16)^4$$

D.
$$3(16)^4$$

Answer: B



199. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{(27-2x)^{\frac{1}{3}}-3}{9-3(243+5x)^{\frac{1}{5}}}$,

for
$$x
eq 0$$
 then $f(0) =$

c.
$$\frac{-2}{3}$$

D.
$$\frac{2}{3}$$

Answer: B



Watch Video Solution

200. If f(x) is continuous at x=0, where $f(x)=\dfrac{\sqrt{1+x}-\sqrt[3]{1+x}}{x}$, for $x \neq 0$, then f(0) =

A.
$$\frac{1}{3}$$

$$\operatorname{B.}\frac{1}{2}$$

C.
$$\frac{5}{6}$$

D. $\frac{1}{6}$

Answer: D



201. If
$$f(x)$$
 is continuous at $x=4$, where $f(x)=\dfrac{x^4-64x}{\sqrt{x^2+9}-5}$, for $x\neq 4$, then $f(4)=$

B. 240

C. 120

D. -240

Answer: B



Watch Video Solution

202. If
$$f(x)=rac{\sqrt{a^2-ax+x^2}-\sqrt{a^2+ax+x^2}}{\sqrt{a+x}-\sqrt{a-x}}$$
 is continuous at $x=0$ then $f(0)$

A.
$$-a\sqrt{a}$$

B. $a\sqrt{a}$

$$C. - \sqrt{a}$$

D.
$$\sqrt{a}$$

Answer: C



Watch Video Solution

203. If f(x) is continuous at x=2a, where

$$f(x)=rac{\sqrt{x}-\sqrt{2a}+\sqrt{x-2a}}{\sqrt{x^2-4a^2}}$$
 , for $x
eq 2a$, then $f(2a)=$

A.
$$2\sqrt{a}$$

C.
$$\frac{1}{2\sqrt{a}}$$

D.
$$\frac{1}{2a}$$

Answer: C



204. If f(x) is continuous at $x=\sqrt{2}$, where

$$f(x)=rac{\sqrt{3+2x}-\left(\sqrt{2}+1
ight)}{x^2-2},$$
 for $x
eq \sqrt{2},$ then $f\left(\sqrt{2}
ight)=$

205. If f(x) is continuous at x=5, where $f(x)=\frac{\sqrt{3+\sqrt{4+x}-\sqrt{6}}}{x-5}$,

$$\sqrt{3+}$$

$$\sqrt{3+2x}-($$

$$\sqrt{3+2x}-\Big($$

A.
$$\frac{1}{2\left(2+\sqrt{2}\right)}$$

$$2\left(2+\sqrt{2}\right)$$

B.
$$\frac{1}{\sqrt{2}\left(2+\sqrt{2}\right)}$$

C.
$$\frac{1}{2 + \sqrt{2}}$$
D. $\frac{1}{2 + 2\sqrt{2}}$

Answer: A



for
$$x
eq 5$$
, then $f(5) =$ A. $\dfrac{1}{2\sqrt{6}}$

B.
$$\frac{1}{3\sqrt{6}}$$

$$\frac{1}{3\sqrt{6}}$$

C.
$$\frac{1}{6\sqrt{6}}$$
D. $\frac{1}{12\sqrt{6}}$

Answer: D



Watch Video Solution

206. If f(x) is continuous at x=0, where $f(x)=\sin x-\cos x$, for $x \neq 0$, then f(0) =

B. 0

C. -1

D. 1

Answer: C



207. If f(x) is continuous at $x=\frac{\pi}{2}$, where $f(x)=\frac{\sqrt{2}-\sqrt{1+\sin x}}{\cos^2 x}$,

for
$$x
eq \frac{\pi}{2}$$
 , then $f\left(\frac{\pi}{2}\right) =$

A.
$$4\sqrt{2}$$

B.
$$2\sqrt{2}$$

C.
$$\frac{1}{4\sqrt{2}}$$
D.
$$\frac{1}{2\sqrt{2}}$$

Answer: C



Watch Video Solution

208. If f(x) is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{1-\tan x}{1-\sqrt{2}\sin x}$, for $x
eq \frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right) =$

- A. 2
- B. $\sqrt{2}$
 - $C. 2\sqrt{2}$

D.
$$\frac{1}{\sqrt{2}}$$

Answer: A



Watch Video Solution

- **209.** If f(x) is continuous at x=0, where $f(x)=\dfrac{\sin \left(\pi \cos^2 x\right)}{x^2}$, for $x \neq 0$, then f(0) =
 - A. $\frac{\pi}{2}$
 - B. 1
 - $\mathsf{C}.-\pi$
 - D. π

Answer: D



210. If f(x) is continuous at $x=rac{\pi}{4}$ where

$$f(x)=rac{2\sqrt{2}-\left(\cos x+\sin x
ight)^3}{1-\sin 2x}$$
 ,for $x
eqrac{\pi}{4}$ then $f\Big(rac{\pi}{4}\Big)=$

211. If f(x) is continuous at $\theta = \frac{\pi}{4}$, where

A.
$$\frac{3}{\sqrt{2}}$$

B. $\frac{\sqrt{2}}{2}$

D. $3\sqrt{2}$

c. $\frac{1}{\sqrt{2}}$

Answer: A



Watch Video Solution

 $f(heta)=\left\{egin{array}{l} rac{1- an heta}{1-\sqrt{2}\sin heta}, ext{ for } & heta
eq rac{\pi}{4} \ rac{k}{2}, ext{ for } & heta=rac{\pi}{4} \end{array}
ight.$, then k=

A. $2\sqrt{2}$

B. $4\sqrt{2}$

C. 2

D. 4

Answer: D



Watch Video Solution

212. The function $f(x)=rac{1-\sin x+\cos x}{1+\sin x+\cos x}$ is not defined at $x=\pi.$ The value of $f(\pi)$, so that f(x) is continuous at $x=\pi$, is

A. -1

B. 1

 $\mathsf{C.}\,\frac{-1}{2}$

D. $\frac{1}{2}$

Answer: A



213. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{2}$, where $f(x)=\frac{\cos x}{\sqrt{1-\sin x}}$, for $x\neq\frac{\pi}{2}$, then $f\Big(\frac{\pi}{2}\Big)=$

A.
$$\frac{1}{2\sqrt{2}}$$

B.
$$\frac{2\sqrt{2}}{\sqrt{2}}$$

C.
$$2\sqrt{2}$$

D.
$$\sqrt{2}$$

Answer: D



214. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{\cos x - \sin x}{\cos 2x}$, for $x \neq \frac{\pi}{4}$, then $f\left(\frac{\pi}{4}\right)=$

A.
$$\frac{1}{\sqrt{2}}$$

B.
$$\frac{-1}{\sqrt{2}}$$

C.
$$\sqrt{2}$$

D.
$$-\sqrt{2}$$

Answer: A



Watch Video Solution

- **215.** If f(x) is continuous at $x=\frac{\pi}{4}$, where $f(x)=\frac{2-\cos ec^2x}{\cot x-1}$, for $x\neq\frac{\pi}{4}$, then $f\Big(\frac{\pi}{4}\Big)=$
 - A. 4
 - B. -4
 - C. 2
 - D. -2

Answer: D



216. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{\sin \left(x^2-x\right)}{x}$, for $x \neq 0$, then $f(0)=$

B. 1

C. 0

D. 2

Answer: A



Watch Video Solution

217. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=egin{cases} rac{x\cos x+3\tan x}{x^2+\sin x}, & ext{for } x\neq 0 \ k^2, & ext{for } x=0 \end{cases}$, then $k=$

A. 2

 $\mathsf{C}.\pm 2$

D. 0

Answer: C



Watch Video Solution

218. If f(x) is continuous at x=0, where

$$f(x)=rac{\sin(a+x)-\sin(a-x)}{\tan(a+x)-\tan(a-x)}, x
eq 0$$
, then $f(0)=$

A. $2 \sec^3 a$

 $B. \sec^3 a$

 $C. 2 \cos^3 a$

 $D.\cos^3 a$

Answer: D



219.
$$f\colon R o R$$
 is defined by $f(x)=\left\{\dfrac{\cos 3x-\cos x}{x^2},x
eq 0\lambda,x=0
ight.$ and f is continuous at $x=0$; then $\lambda=$

220. If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} \frac{1-\cos x}{x}, \ {
m for} & x
eq 0 \ k, \ {
m for} x=0 \end{array}
ight.$

B. -2

C. -8

D. -6

Answer: A



then
$$k=$$

A.
$$\frac{1}{2}$$

B.
$$\frac{2}{2}$$

$$\mathsf{C.}\,\frac{1}{4}$$

Answer: D



Watch Video Solution

- **221.** If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} rac{1-\cos kx}{x^2}, ext{ for } & x
 eq 0 \ rac{1}{2}, ext{ for } & x=0 \end{array}
 ight.$
- , then k=
 - A. 1
 - B. -1
 - $\mathsf{C}.\pm 1$
 - D. 0

Answer: C



222. If f(x) is continuous at x=0, where $f(x)=\dfrac{1-\cos 3x}{x\tan x}$ for $x\neq 0$,

then
$$f(0) =$$

$$\mathsf{A.}\;\frac{3}{2}$$

$$\mathsf{B.}\,\frac{9}{2}$$

C.
$$\frac{3}{4}$$
D. $\frac{9}{4}$

Answer: B



Watch Video Solution

where x = 0, is a continuous function at x = 0 Then: k = 0

223. Function $f(x) = \left(1-\cos 4x\right)/\left(8x^2\right), \;\; ext{where} \;\; x
eq 0$, and f(x) = k,

A. 16

B. 2

C. -1

Answer: D



Watch Video Solution

- **224.** If f(x) = is continuous at x = 0, where $f(x)=rac{(1-\cos 2x)(3+\cos x)}{x an 4x}$, for x
 eq 0 , then f(0)=
 - A. 2
 - B. $\frac{1}{2}$
 - C. 4
 - D. 3

Answer: A



225. If $lpha,\,eta$ are the roots of $ax^2+bx+c=0$ and f(x) is continuous at

$$x=lpha$$
 , where $f(x)=rac{1-\cosig(ax^2+bx+cig)}{ig(x-lphaig)^2}$, for $x
eqlpha$, then $f(lpha)=$

A. 0

B.
$$\frac{4ac-b^2}{2}$$

C.
$$rac{b^2-4ac}{2}$$

D.
$$\frac{b^2-4ac}{2a^2}$$

Answer: C



226. If
$$f(x)$$
 is continuous at $x=0$, where $\int \frac{\cos^2 x - \sin^2 x - 1}{1+x^2} f(x) dx = 0$

$$f(x)=\left\{egin{array}{l} rac{\cos^2x-\sin^2x-1}{\sqrt{x^2+1}-1}, ext{ for } & x
eq 0 \ 2k, ext{ for } & x=0 \end{array}
ight.$$
 , then $k=$

C. 2

D. 4

Answer: A



Watch Video Solution

227. If f(x) is continuous at x=a, where

$$f(x)=rac{\sin(a+x)+\sin(a-x)-2\sin a}{x\sin x},\, ext{for}\ \ x
eq a$$
 , then $f(a)=$

A.
$$\frac{1}{a}(1-\cos a)$$

B.
$$\frac{1}{a}(\cos a - 1)$$

C.
$$\frac{2}{a}(1-\cos a)$$

D.
$$\frac{2}{a}(\cos a - 1)$$

Answer: D



228. If f(x) is continuous at x=0, where $f(x)=\dfrac{3-4\cos x+\cos 2x}{x^2}$,

for
$$x \neq 0$$
, then $f(0) =$

A. 0

B. 2

C. -2

D. 4

Answer: A



Watch Video Solution

229. If f(x) is continuous at x=0, where $f(x)=\dfrac{3-4\cos x+\cos 2x}{x^4}$, for $x \neq 0$, then f(0) =

A.
$$\frac{1}{4}$$

B. $\frac{1}{2}$

C. 8

Answer: B



Watch Video Solution

230. The value of k which makes $f(x)=egin{cases} \sin\left(rac{1}{x}
ight), & \text{for } x
eq 0 \\ k, & \text{for } x=0 \end{cases}$ continuous at x=0 is

A. 0

B. 1

C. -1

D. no value of k

Answer: D



231. If the function f(x) defined by

$$f(x) = \left\{ egin{array}{ll} x \sinrac{1}{x}, & ext{for} & x
eq 0 \ k, & ext{for} & x = 0 \end{array}
ight.$$

is continuous at x = 0, then k is equal to

- A. 0
- B. 1
- C. -1
- D. $\frac{1}{2}$

Answer: A



232. If
$$f(x)$$
 is continuous at $x=a$, where $f(x)=(x-a)\mathrm{sin}\Big(\frac{1}{x-a}\Big)$, for $x \neq a$, then $f(a)=$

- A. 1
- B. -1

C. 0

 $D. \infty$

Answer: C



Watch Video Solution

233. If $(x) = \frac{1 - \sqrt{3} \tan x}{\pi - 6x}$, for $x \neq \frac{\pi}{6}$ is continous at

$$x = \frac{\pi}{6}$$
, find $f\left(\frac{\pi}{6}\right)$.

A.
$$\frac{1}{3\sqrt{3}}$$

$$\mathrm{B.}\ \frac{1}{2\sqrt{3}}$$

$$\mathsf{C.}\ \frac{2}{3\sqrt{3}}$$

$$\text{D.}\ \frac{4}{3\sqrt{3}}$$

Answer: C



234. Value of f
$$\left(\frac{\pi}{4}\right)$$
 so that the function f(x) $=\frac{\tan\left(\frac{\pi}{4}-x\right)}{\cot 2x}, x
eq \frac{\pi}{4}$ is

continuous everywhere is

- A. 2
- B. 1
- c. $\frac{1}{2}$
- D. $\frac{1}{4}$

Answer: C



Watch Video Solution

235. Find the value of k, if the functions are continuous at the points given against them:

$$f(x)=rac{\sqrt{3}- an x}{\pi-3x}, \;\; ext{for} x
eq rac{\pi}{3} \ = k, \qquad \qquad ext{for} x=rac{\pi}{3} \ iggr \} at x=rac{\pi}{3}.$$

A.
$$\frac{-2}{3}$$

D.
$$\frac{4}{3}$$

 $\mathsf{B.}\,\frac{2}{3}$

c. $\frac{-4}{3}$

Answer: D



Watch Video Solution

- **236.** If f(x) is continuous at $x=rac{\pi}{2}$, where $f(x)=rac{1-\sin x}{\left(rac{\pi}{2}-x
 ight)^2}$, for
- $x \neq \frac{\pi}{2}$, then $f\left(\frac{\pi}{2}\right) =$

 - A. $\frac{1}{2}$
 - B. $\frac{-1}{2}$
 - C. $\frac{\pi}{2}$
 - D. $\frac{-\pi}{2}$

Answer: A



237. If f(x) is continuous at $x=rac{\pi}{2}$, where $f(x)=rac{1-\sin x}{\left(\pi-2x
ight)^2}$, for

$$x
eq rac{\pi}{2}$$
 , then $f\Bigl(rac{\pi}{2}\Bigr)=$

A.
$$\frac{-1}{4}$$

B.
$$\frac{-1}{8}$$

c.
$$\frac{1}{4}$$

D.
$$\frac{1}{8}$$

Answer: D



238. If
$$f(x)$$
 is continuous at $x=\frac{\pi}{2}$, where $f(x)=\left\{egin{array}{ll} \frac{1-\sin x}{\pi-2x}, & ext{for } x
eq rac{\pi}{2} \end{array}
ight.$,then $\lambda=\lambda$, for $x=rac{\pi}{2}$

C. 0

D. 2

Answer: C



Watch Video Solution

239. For what value of k, function $f(x)=\left\{egin{array}{ll} rac{k\cos x}{\pi-2x}, & ext{if} & x eq rac{\pi}{2} \\ 3, & ext{if} & x=rac{\pi}{2} \end{array} ight.$ is continuous at $x = \frac{\pi}{2}$?

- A. 3

B. -3

- C. 6
- D. -6

Answer: C



240. If
$$f(x)$$
 is contiuous at $x=\frac{\pi}{2}$, where

$$x=rac{\pi}{2}$$
, when

$$\frac{\sec x - \tan x}{\pi}$$

$$f(x)=rac{\sec x- an x}{rac{\pi}{2}-x}, ext{for} \;\; x
eq rac{\pi}{2}, ext{then } f\Big(rac{\pi}{2}\Big)=$$

A.
$$\frac{1}{4}$$

$$\mathsf{B.}\,\frac{1}{2}$$

C.
$$\frac{1}{6}$$

D. $\frac{1}{8}$

Answer: B



241. If
$$f(x)$$
 is continuous at $x=\pi$, where $f(x)=rac{\sqrt{2+\cos x}-1}{\left(\pi-x
ight)^2},$ for $x
eq\pi$, then $f(\pi)=$

A.
$$\frac{1}{4}$$

Answer: A

 $B. \frac{-1}{4}$

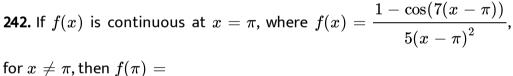
c. $\frac{1}{2}$

D. $\frac{-1}{2}$

Watch Video Solution















Answer: B

243. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=(1+2x)^{\frac{1}{x}},$ for $x
eq 0$,

then f(0) =

A.
$$e^2$$

B.
$$e^{-2}$$

$$\mathsf{C.}\,2e$$

$$D.-2e$$

Answer: A



244. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=egin{cases} (1+3x)^{rac{1}{x}}, & ext{for } x
eq 0, \ k, & ext{for } x=0 \end{cases}$, then $k=0$

A.
$$e^{-3}$$

$${\rm B.}\,e^3$$

 $\mathsf{C}.\,3e$

D. e

Answer: B



Watch Video Solution

245. If f(x) is continuous at x=0, where

$$f(x)=\left(rac{4-3x}{4}
ight)^{rac{8}{x}},\, ext{for}\ \ x
eq 0, ext{then}\ f(0)=$$

A. e^{-3}

B. e^{-4}

C. e^{-6}

D. e^{-12}

Answer: C



246. If
$$f(x)=\left\{egin{array}{l} rac{x^2-4}{x-2}, ext{ for } & x
eq 2 \ 5, ext{ for } & x=2 \end{array}
ight.$$
 , then at $x=2$

A. f is continuous if f(0) = -2

B. f is continuous

C. f has removable discontinuity

D. f has irremovable discontinuity

Answer: C



Watch Video Solution

247. If
$$f(x)=\left\{ egin{array}{ll} \sqrt[3]{rac{4x+1}{1-4x}}, \ ext{for} \quad x
eq 0 \ e^6, \ ext{for} \quad x=0 \end{array}
ight.$$
 , then at $x=0$

A. f is continuous if $f(0) = e^{-8}$

B. f is continuous

C. f has irremovable discontinuity

D. f has removable discontinuity

Answer: D



Watch Video Solution

248. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\left(rac{4-3}{4+5x}
ight)^{rac{1}{x}},$ for $x
eq 0$, then $f(0)=$

A.
$$e^2$$

 $B.e^{-2}$

 $C.e^{-3}$

D. e^5

Answer: B



Watch Video Solution

249. If f(x) is continuous at x=2, where $f(x)=(x-1)^{\frac{1}{2-x}}$, for x
eq 2, then f(2) =

250. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=egin{cases} \left(\sec^2x\right)^{\cot^2x}, & ext{for } x
eq 0, \\ k, & ext{for } x=0 \end{cases}$ then $k=1$

A. $\frac{1}{e}$

B. $\frac{2}{e}$

C. e

D. 2e

D. e

A. $\frac{-1}{e}$

B. $\frac{1}{e}$

 $\mathsf{C}.-e$

Answer: B

251. If
$$f(x)$$
 is continuous at $x=rac{\pi}{4}$, where $f(x)=(1+\cos 2x)^{4\sec 2x}$, for $x
eqrac{\pi}{4}$, then $f\Big(rac{\pi}{4}\Big)=$

A.
$$e^{\,-4}$$

B. e^4

 $\mathsf{C.}\,4e$

D. e

Answer: B



Watch Video Solution

252. In order that the function $f(x) = \left(x+1\right)^{\cot x}$ is continuous at x=0 , the value of f(0) must be defined as:

A.
$$f(0) = 0$$

B.
$$f(0) = e$$

C.
$$f(0) = \frac{1}{e}$$

D.
$$f(0)=rac{2}{e}$$

Answer: B



Watch Video Solution

253. $f(x)=\left\{egin{array}{ll} \left(anrac{\pi}{4}+x ight)^{1/x},& x eq 0 \ k,& x=0 \end{array} ight.$ for what value of k, f(x) is continuous at x = 0?

- A. e
- $B.e^{-1}$
- $\mathsf{C}.\,e^2$
- D. e^{-2}

Answer: C



254. If
$$f(x)$$
 is continuous at $x=rac{\pi}{4}$, where $f(x)=\left(\sin 2x\right)^{\tan^2 2x}$, for $x
eq rac{\pi}{4}$, then $f\Big(rac{\pi}{4}\Big)=$

A.
$$\frac{1}{\sqrt{e}}$$

B.
$$\frac{-1}{\sqrt{e}}$$

C.
$$\sqrt{e}$$

D. e^{-2}

Answer: A



Watch Video Solution

255. If
$$f(x)$$
 is continuous at $x=1$, where $f(x)=(\log_2 2x)^{\log_2 x}$, for $x
eq 1$, then $f(1)=$

A. 0

B. 1

C. e

D. e^2

Answer: C



Watch Video Solution

256. If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} rac{8^x-2^x}{k^x-1}, ext{ for } & x eq 0 \ 2, ext{ for } & x=0 \end{array} ight.$

then k =

A. 4

B. -2

C. 2

D. ± 2

Answer: C



257. If f(x) is continuous at x=0, where $f(x)=\dfrac{4^x-e^x}{6^x-1}$, for $x\neq 0$,

then f(0) =

$$A. \frac{\log 4 - 1}{\log 6}$$

$$\mathsf{B.}\,\frac{1-\log 4}{\log 6}$$

$$\mathsf{C.}\ \frac{\log 2 - 2}{\log 6}$$

D.
$$\frac{2 - \log 2}{\log 6}$$

Answer: A



Watch Video Solution

258. The value of f at x =0 so that funcation $f(x)=rac{2^x-2^{-x}}{x}, x
eq 0$ is continuous at x =0 is

A. 0

B. e^4

 $\mathsf{C}.\log 4$

Answer: C



Watch Video Solution

- **259.** The function $f(x) = \frac{\log(1+ax) \log(1-bx)}{x}$ is not difined at x =
- 0. The value which should be assigned to f at x = 0, so that it is continuous at x = 0, is
 - A. $\log a + \log b$
 - B. $\log a \log b$
 - $\mathsf{C}.\,a+b$
 - D.a-b

Answer: C



260. If f(x) is continuous at x=0, where $f(x)=rac{\log 100+\log (0.01+x)}{3x}$, for x
eq 0, then f(0)=

A.
$$\frac{10}{3}$$

B. $\frac{100}{3}$

C. $\frac{1}{3}$

Answer: B

D. 100



$$f(x) = \left\{ egin{aligned} \log_{(1-2x)}(1+2x), & ext{for} & x
eq 0 \ k, & ext{for} & x = 0 \end{aligned}
ight.$$
 , then $k =$

261. If f(x) is continuous at x=0, where

- A. 1
- B. -1
- C. 2

Answer: B



Watch Video Solution

262. If
$$f(x)=egin{cases} \log_{(1-3x)}(1+3x), & ext{for} & x
eq 0 \\ k, & ext{for} & x=0 \end{cases}$$
 is continuous at x = 0,

then k is equal to

A. -1

B. 1

C. 3

D. -3

Answer: A



263. If
$$f(x)$$
 is continuous aat $x=7$, where $f(x)=\dfrac{\log x - \log 7}{x-7}$, for $x \neq 7$, then $f(7)=$

264. If f(x) is continuous at x=0, where $f(x)=rac{e^{5x}-e^{2x}}{\sin 3x}$, for x
eq 0

B. 7

C.
$$\frac{1}{14}$$

D. $\frac{1}{7}$

Answer: D



Watch Video Solution

A. 1

then f(0) =

B. -1

C. 3

D.
$$\frac{7}{3}$$

Answer: A



Watch Video Solution

265. Let
$$f(x)=rac{\left(e^{kx}-1
ight).\sin Kx}{x^2}$$
 for $x
eq 0;=4,$ for $x=0$ is continuous at $x=0$ then k

A. 4

B. -2

C. 2

D. ± 2

Answer: D



266. If f(x) is continuous at x=0, where $f(x)=\frac{\left(e^{2x}-1\right)\tan x}{x\sin x}$, for $x \neq 0$, then f(0) =

A.
$$\frac{1}{2}$$

$$\mathsf{B.}\,\frac{-1}{2}$$

D. -2

Answer: C



267. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{\left(e^{3x}-1\right)\sin x^{\circ}}{x^2}$, for $x
eq 0$, then $f(0)=$

A.
$$\frac{\pi}{180}$$

B.
$$\frac{\pi}{60}$$

$$\mathsf{C.}\,\frac{\pi}{90}$$

D. 3

Answer: B



Watch Video Solution

268. If f(x) is continuous at x=0, where $f(x)=rac{e^{x^2}-\cos x}{x^2}$, for x eq 0

, then
$$f(0)=$$

A.
$$\frac{3}{2}$$

 $\mathsf{B.}\,\frac{1}{2}$

C. 1

D. $\frac{-1}{2}$

Answer: A



269. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\left\{egin{array}{c} rac{3^x-3^{-x}}{\sin x}, & ext{for} & x
eq 0 \ k, & ext{for} & x=0 \ \end{array}
ight.$

then k =

B. log 3

C. log 1

D. log e

Answer: A



- **270.** If f(x) is continuous at x=0, where $f(x)=\left\{egin{array}{c} rac{9^x-9^{-x}}{\sin x}, & ext{for} & x
 eq 0 \ k, & ext{for} & x=0 \end{array}
 ight.$ then k =
 - A. log 9
 - B. log 81

C. 2 log 3

D. $(\log 9)^2$

Answer: B



Watch Video Solution

271. If f(x) is continuous at x=0, where $f(x)=\dfrac{10^x+7^x-14^x-5^x}{1-\cos 4x}$,

for $x \neq 0$, then f(0) =

A.
$$\frac{1}{4}(\log 2)\log\left(\frac{5}{7}\right)$$

B.
$$\frac{1}{8}(\log 2)\log\left(\frac{5}{7}\right)$$

$$\mathsf{C.}\ \frac{1}{4}(\log 2)\log\left(\frac{7}{5}\right)$$

D.
$$\frac{1}{8}(\log 2)\log\left(\frac{7}{5}\right)$$

Answer: B



272. If f(x) is continuous at x=0, where $f(x)=\dfrac{(5^x-2^x)x}{\cos 5x-\cos 3x}$, for

$$x
eq 0$$
, then $f(0) =$

A.
$$\frac{-1}{4}\log\left(\frac{2}{5}\right)$$

B.
$$\frac{1}{4}\log\left(\frac{2}{5}\right)$$
C. $\frac{-1}{8}\log\left(\frac{2}{5}\right)$

D.
$$\frac{1}{8}\log\left(\frac{2}{5}\right)$$

Answer: D



273. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{4^x-2^{x+1}+1}{1-\cos x}$, for $x
eq 0$, then $f(0)=$

A.
$$(2 \log 2)^2$$

$$B. 2(\log 2)^2$$

$$\mathsf{C.} \left(\log 2\right)^2$$

D.
$$\frac{\left(\log 2\right)^2}{2}$$

Answer: B



Watch Video Solution

- **274.** If f(x) is continuous at $x=rac{\pi}{2}$, where $f(x)=rac{3^{x-rac{\pi}{2}}-6^{x-rac{\pi}{2}}}{\cos x}$, for $x \neq \frac{\pi}{2}$, then $f\left(\frac{\pi}{2}\right) =$
 - A. log 3
 - B. log 6
 - C. log 2
 - D. log 18

Answer: C



275. If
$$f(x)$$
 is continuous at $x=a,a>0$, where $f(x)=\left[\frac{a^x-x^a}{x^x-a^a}
ight]$, for $x\neq a$, -1 for x=a, then $a=$

If f(x) is continuous at x=0, where

B. 2e

C. 1

D. 0

Answer: C



276.

Watch Video Solution

$$f(x) = \left\{ egin{array}{l} rac{\log{(1+kx)}}{\sin{x}}, ext{for} & x
eq 0 \ 5, ext{for} & x = 0 \end{array}
ight.$$
 , then $k =$

B. -5

A. 5

C.
$$\frac{1}{5}$$
D. $\frac{-1}{5}$

Answer: A



Watch Video Solution

277. For what value of k, the function defined by

$$f(x) = \left\{ egin{array}{ll} rac{\log\left(1+2x
ight)\sin x^{\circ}}{x^{2}}, & ext{for} & x
eq 0 \ k, & ext{for} & x = 0 \end{array}
ight.$$

is continuous at x = 0?

B.
$$\frac{1}{2}$$

$$\mathsf{C.}\,\frac{\pi}{90}$$

D.
$$\frac{90}{\pi}$$

Answer: C



278. If f(x) is continuous at x=0, where $f(x)=\dfrac{\log\sec^2x}{x\sin x}$, for $x\neq 0$ then f(0)=

A. e

 $B.\pm 1$

C. -1

D. 1

Answer: D



Watch Video Solution

279. If f(x) is continuous at x=0, where $f(x)=rac{\log (1+x^2)-\log (1-x^2)}{\sec x-\cos x}$, for x
eq 0, then f(0)=

A. 0

B. 2

C. 1

D. -1

Answer: B



Watch Video Solution

280. If f(x) is continuous at x=0, where

$$f(x)=rac{\logig(1+x+x^2ig)+\logig(1-x+x^2ig)}{\sin x}$$
 , for $x
eq 0$, then $f(0)=$

A. 0

B. 2

C. 1

D. -1

Answer: A



281. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=rac{\log(2+x)-\log(2-x)}{\tan x}$, for $x
eq 0$, then $f(0)=$

$$=rac{\log(2+x)-\log(2-x)}{\tan x}$$
 , for $x
eq 0$, then $f(0)=$

282. If f(x) is continous at $x=0, \,\,$ where $f(x) \frac{\left(e^{3x}-1
ight) \sin x}{x \log (1+x)},$ for x
eq 0,

A.
$$\frac{1}{4}$$

4 B.
$$\frac{1}{2}$$

Answer: D



- find f(0).
 - A. 1
 - B. 3

D. $\frac{1}{3}$

Answer: B



Watch Video Solution

283. If
$$f(x)=rac{\left(8^x-1
ight)^2}{\sin x \log \left(1+rac{x}{4}
ight)}$$
 in $[-1,1]-\{0\}$, then for removable

discontinuity of f at x=0, f(0)=

A. 4 log 8

B. 8 log 2

 $\mathsf{C.}\,4{(\log 8)}^2$

 $D.8(\log 2)^2$

Answer: C



284. If
$$f(x)$$

284. If f(x) is continuous at x=0, where $f(x)=\dfrac{\left(4^{\sin x}-1\right)^2}{x\log(1+2x)}$, for $x \neq 0$, then f(0) =

A.
$$\frac{1}{4}(\log 4)^2$$

$$\mathsf{B.}\ \frac{1}{2}(\log 4)^2$$

$$\mathsf{C.}\ 2(\log 4)^2$$

$$\mathsf{D.}\ 2(\log 2)^2$$

Answer: D



285. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=\dfrac{\left(3^{\sin x}-1\right)^2}{x\log(1-x)}$, for $x
eq 0$, then $f(0)=$

A.
$$(\log 3)^2$$

$$\text{C.}\ \frac{1}{2}\log 3$$

D. log 3

Answer: A



Watch Video Solution

A. 1

 $B. \pm 2$

C. 2

D. -2

 $f(x)=\left\{egin{array}{l} rac{\left(e^x-1
ight)^4}{\sin\left(rac{x^2}{k^2}
ight)\log\left(1+rac{x^2}{2}
ight)}, ext{ for } & x
eq 0 \ 8, ext{ for } & x=0 \end{array}
ight.$, then k=

286. If f(x) is continuous at x=0, where

Watch Video Solution

Answer: B

287. If
$$f(x)=rac{e^x+e^{-x}-2}{x\sin x}$$
, for $x\in\left[rac{-\pi}{2},rac{\pi}{2}
ight]-\{0\}$, then for f to be continuous in $\left[rac{-\pi}{2},rac{\pi}{2}
ight],f(0)=$

A.
$$-e^2$$

 $B.e^2$

C. -1

D. 1

Answer: D



Watch Video Solution

288. The function defined by
$$f(x)=egin{cases} \left(1+ an^2\sqrt{x}
ight)^{rac{1}{2x}},\ ext{for}\quad x
eq 0 \ k,\ ext{for}\quad x=0 \end{cases}$$
 , is continuous from right at point $x=0$, then $k=$

A. e

 $B.e^2$

C.
$$e^{rac{1}{2}}$$

D. $e^{\frac{1}{4}}$

Answer: C



Watch Video Solution

289. The function defined by

$$f(x)=egin{cases} \left(x^2+e^{rac{1}{2-x}}
ight)^{-1}, & x
eq 2 \ k & , & x=2 \end{cases}$$
 is continuous from right at the point

$$x = 2$$
, then k is equal to

A. 0

B. 4

c. $\frac{-1}{4}$

D. $\frac{1}{4}$

Answer: D



290. If
$$f(x) = x^2 - \sin x + 5$$
, then at $x = \pi$

A. f is discontinuous

B. f is continuous

C.
$$\lim_{x o \pi^-} f(x) = \pi^2 - 5$$

D.
$$\lim_{x o \pi^+} f(x) = 5 - \pi^2$$

Answer: B



291. If
$$f(x)=\left\{egin{array}{ll} x,\, ext{for} & 0\leq x<rac{1}{2} \ 1-x,\, ext{for} & rac{1}{2}\leq x<1 \end{array}
ight.$$
 , then

A.
$$\lim_{x o rac{1^-}{2}}f(x)=rac{-1}{2}$$

B.
$$\lim_{x o rac{1^+}{2}} f(x) = rac{-1}{2}$$

C. f is continuous at
$$x=rac{1}{2}$$

D. f is discontinuous at $x=rac{1}{2}$

Answer: C



Watch Video Solution

292. If
$$f(x) = \begin{cases} rac{x^2-9}{x-3}, & ext{for} \quad 0 < x < 3 \\ x+3, & ext{for} \quad 3 \leq x < 6 \text{ , then f is} \\ rac{x^2-9}{x+3}, & ext{for} \quad 6 \leq x < 9 \end{cases}$$

A. continuous at $x=3, \, x=6$

B. discontinuous at $x=3,\,x=6$

C. continuous at x=6 and discontinuous at $x=3\,$

D. continuous at x=3 and discontinuous at x=6

Answer: D



293. If
$$f(x)=\left\{egin{array}{l} rac{\sin2x}{\sqrt{1-\cos2x}}, ext{ for } 0< x<rac{\pi}{2} \ rac{\cos x}{\pi-2x}, ext{ for } rac{\pi}{2}< x<\pi \end{array}
ight.$$
 , then

A. f is discontinuous at
$$x=rac{\pi}{2}$$

B. f is continuous at
$$x=rac{\pi}{2}$$

C.
$$\lim_{x o rac{\pi^-}{2}}f(x)=rac{1}{2}$$

D.
$$\lim_{x o rac{\pi^+}{2}}f(x)=0$$

Answer: A



294. If
$$f(x) = \begin{cases} x-1, & \text{for } 1 \le x < 2 \\ 2x+3, & \text{for } 2 \le x \le 3 \end{cases}$$
 , then at $x=2$

A.
$$\lim_{x \to 2^{-}} f(x) = 7$$

$$\text{B. } \lim_{x\,\rightarrow\,2^{\,+}}\,f(x)=1$$

C. f has removable discontinuity at
$$x=2$$

D. f has irremovable discontinuity at
$$x=2$$

Answer: D



Watch Video Solution

295. If
$$f(x)=\left\{egin{array}{ll} x\sin x, & ext{for} & 0< x \leq rac{\pi}{2} \ rac{\pi}{2} \sin(\pi+x), & ext{for} & rac{\pi}{2} < x < \pi \end{array}
ight.$$
 , then

A.
$$f(x)$$
 is discontinuous at $x=rac{\pi}{2}$

B.
$$f(x)$$
 is continuous at $x=rac{\pi}{2}$

C.
$$f(x)$$
 is continuous at $x=0$

D.
$$f(x)$$
 is discontinuous at $x=0$

Answer: A



296. If
$$f(x)$$
 is continuous at $x=0$, where

$$f(x)=\left\{egin{array}{l} rac{\sin x}{x}+\cos x, ext{ for } & x>0 \ rac{4\left(1-\sqrt{1-x}
ight)}{x}, ext{ for } & x<0 \end{array}
ight.$$
 , then $f(0)=$

B. -2

C. 4

D. -4

Answer: A



Watch Video Solution

297. If
$$f(x)=\left\{egin{array}{ll} x+2, ext{if} & x\leq 4 \ x+4, ext{if} & x>4 \end{array}
ight.$$
 then

- A. $\lim_{x
 ightarrow 4^+} f(x) = 6$
 - B. $\lim_{x o 4^-} f(x) = 8$
- C. f has removable discontinuity
- D. f has irremovable discontinuity

Answer: D



298. If
$$f(x)=\left\{egin{array}{ll} 2x, ext{ if } & x<2 \ 2, ext{ if } & x=2 \ & x^2, ext{ if } & x>2 \end{array}
ight.$$

- A. $\lim_{x\, o\,2^-}\,f(x)=\,-\,4$
- B. $\lim_{x o 2^+} f(x) = -4$
- C. f has irremovable discontinuity
- D. f has removable discontinuity

Answer: D



Watch Video Solution

299. If
$$f(x)=\left\{ egin{array}{ll} x-1, & ext{for} & 1\leq x<2 \\ 2, & ext{for} & x=2 \\ 2x-3, & ext{for} & 2< x<3 \end{array}
ight.$$
 , then f has removable

discontinuity at
$$x=2$$
, if $f(2)=$

A. 2

B. 3

C. 1

D. -1

Answer: C



Watch Video Solution

300. If
$$f(x) = \left\{ egin{aligned} x^2, & ext{for} & x \leq 1 \ x+3, & ext{for} & x > 1 \end{aligned}
ight.$$
 , then at $x=1$

A.
$$\lim_{x o 1^-} f(x) = 4$$

B.
$$\lim_{x\,
ightarrow\,1^+}\,f(x)=1$$

C. f has removable discontinuity

D. f has irremovable discontinuity

Answer: D



301. If $f(x) = \sqrt{x-2}$, for 2 < x < 4, then f(x) is

A. continuous in (2, 4) except at x=3

B. discontinuous in (2, 4) except at x=3

C. discontinuous in (2, 4)

D. continuous in (2, 4)

Answer: D



Watch Video Solution

302. If
$$f(x) = \left\{ egin{array}{ll} 1-x, ext{for} & 0 < x \leq 1 \ rac{1}{2}, ext{for} & x = 0 \end{array}
ight.$$
 , then in [0, 1]

A. f(x) is not continuous

B. f(x is continuous

C. f(x) is continuous at x=0

D. f(x) is continuous at x=1

Answer: A



Watch Video Solution

303. If
$$f(x) = \left\{ egin{array}{ll} 3x+5, \, {
m for} & 0 \leq x < 3 \\ 2x+8, \, {
m for} & 3 \leq x < 5 \\ x+13, \, {
m for} & 5 \leq x \leq 10 \end{array}
ight.$$
 , then

- A. f(x) is discontinuous in its domain
- B. f(x) is continuous in its domain
- C. f(x) is continuous in its domain except at x=3
- D. f(x) is continuous in its domain except at x=5

Answer: B



304. If
$$f(x) = \left\{ egin{array}{l} rac{\sin x}{x}, \, ext{for} \quad x < 0 \ x + 1, \, ext{for} \quad x \geq 0 \end{array}
ight.$$
 , then

A. f is continuous on its domain

B. f is discontinuous on its domain

C. f is continuous on its domain except x=0

D. f is discontinuous on its domain except x=0

Answer: A



Watch Video Solution

305. If
$$f(x)=\left\{egin{array}{ll} rac{2x+5}{x+1}, & ext{for} & 0 \leq x < 2 \ 4x-5, & ext{for} & 2 \leq x \leq 4 \ rac{x^2+2}{x-5}, & ext{for} & 4 < x \leq 6, x
eq 5 \end{array}
ight.$$
 then

A. f is continuous on its domain

B. f is continuous on its domain except x=5

C. f is continuous on its domain except x=4

D. f is continuous on its domain except x=2

Answer: C

306. If
$$f(x)=\left\{egin{array}{l} rac{\sin2x}{\sqrt{1-\cos2x}}, ext{ for } \ 0< x \leq rac{\pi}{2} \ rac{\cos x}{\pi-2x}, ext{ for } \ rac{\pi}{2} < x \leq \pi \end{array}
ight.$$

A. f is continuous on its domain except
$$x=rac{\pi}{2}$$

B. f is continuous on its domain

C. f is discontinuous on its domain

D. f is continuous on its domain except x=0

Answer: A



Watch Video Solution

307. If
$$f(x) = \left\{egin{array}{ll} x, ext{ for } & 0 \leq x < 1 \ 2, ext{ for } & x = 1 \ x + 1, ext{ for } & 1 < x \leq 2 \end{array}
ight.$$
 , then f is

A. f is continuous at x=1

B. f is discontinuous at x=1

C.
$$\lim_{x \to 1^-} f(x) = 2$$

D.
$$\lim_{x o 1^+} f(x) = 1$$

Answer: B



Watch Video Solution

308. If $f(x) = \frac{x^3 + 3x + 5}{x^3 - 3x + 2}$ in [0, 5], then f is

A. continuous on its domain except at
$$x=1, x=\,-\,2$$

B. continuous on its domain except at x=1

C. continuous on its domain except at $x=\,-\,2$

D. continuous on its domain

Answer: B



309. If
$$f(x) = \frac{x+1}{(x-2)(x-5)}$$
, then in [4, 6]

A. f is discontinuous

B. f is continuous

C. f is continuous except at x=2

D. f is continuous except at x=5

Answer: D



Watch Video Solution

310. If $f(x) = \frac{x+1}{(x-2)(x-5)}$, then in [0, 1]

A. f is continuous

B. f is discontinuous

C. f is continuous except at x=0

D. f is continuous except at x=1



Watch Video Solution

311. If $f(x) = \left\{ egin{aligned} x, & ext{for} & x \geq 0 \ x^2, & ext{for} & x < 0 \end{aligned}
ight.$, then f is

A. continuous on R except at x=0

B. continuous on R

C. discontinuous on R except at x=0

D. continuous on R^{+} only

Answer: B



312. If
$$f(x) = \left\{ egin{aligned} x^2 - 4, & ext{for} & 0 \leq x \leq 2 \\ 2x + 3, & ext{for} & 2 < x \leq 4 \end{array}
ight.$$
, then $x^2 - 5, & ext{for} & 4 < x \leq 6 \end{array}
ight.$

A. f is continuous on [0, 6]

B. f is discontinuous on [0, 6]

C. f is continuous on [0, 6] except at x=2

D. f is continuous on [0, 6] except at x=4

Answer: C



Watch Video Solution

313. If
$$f(x) = \left\{ egin{array}{l} rac{1}{x+1}, ext{ for } & 2 \leq x \leq 4 \\ rac{x+1}{x-3}, ext{ for } & 4 < x \leq 6 \end{array}
ight.$$
 , then

A. f is discontinuous on [2, 6]

B. f is continuous on [2, 6]

C. f is continuous on [2, 6] except at x=3

D. f is continuous on [2, 6] except at x=4

Answer: D



314. If
$$f(x)= egin{cases} 3, ext{ if } &0\leq x\leq 1 \ 4, ext{ if } &1< x<3 \ , ext{ then} \ 5, ext{ if } &3\leq x\leq 10 \end{cases}$$

A. f is continuous on [0, 10] except at x=1,3

B. f is continuous on [0, 10] except at x=1

C. f is continuous on [0, 10] except at x=3

D. f is continuous on [0, 10]

Answer: A



Watch Video Solution

315. If
$$f(x)= egin{cases} -2, ext{ for } & x\leq -1 \ 2x, ext{ for } & -1 < x\leq 1 ext{ , then } \ 2, ext{ for } & x>1 \end{cases}$$

A. f is discontinuous on its domain

B. f is continuous on its domain

C. f is continuous on its domain except at x=-1

D. f is continuous on its domain except at x=1

Answer: B



Watch Video Solution

316.
$$f(x) = egin{cases} |x|+3 & ext{ if } & x \leq -3 \ -2x & ext{ if } & -3 < x < 3 \ 6x+2 & ext{ if } & x \geq 3 \end{cases}$$

A. f is continuous on its domain except at $x=\,-\,3$

B. f is continuous on its domain except at $x=3\,$

C. f is continuous on its domain except at $x=\,-\,3,\,3$

D. f is continuous on its domain

Answer: C



317. If $f(x) = \left\{ egin{array}{ll} 2x, \, {
m for} & x < 0 \ 2x + 1, \, {
m for} & x \geq 0 \end{array}
ight.$, then

A. f(|x|) is continuous at x=0

B. f(x) is discontinuous at x=0

C. f(x) is continuous at x = 0

D. f(|x|) is discontinuous at x=0

Answer: B



Watch Video Solution

318. Function $f(x) = \begin{cases} x-1, & x<2\\ 2x-3, & x>2 \end{cases}$ is a continuous function

A. for x = 2 only

B. for all real values of x

C. for all real values of x such that x
eq 2

D. for all integral values of x only

Answer: B



Watch Video Solution

319. If
$$f(x) = \frac{x^3 - 8}{x^2 + x - 20}$$
, then

A. f is continuous on R

B. f is continuous on R - (-5, 4)

C. f is continuous on R - {-5, 4}

D. f is continuous on R - [-5, 4]

Answer: C



Watch Video Solution

320. If
$$f(x)=\left\{egin{array}{ll} rac{x^2-3x+2}{x-3}, & ext{for} & 0\leq x<4 \ rac{x^2-1}{x-2}, & ext{for} & 4\leq x\leq 6 \end{array}
ight.$$
 , then on [0, 6]

A. f is continuous except at $x=2\,$

B. f is continuous except at x=3

C. f is continuous except at x=4

D. f is continuous except at x = 3and x = 4

Answer: D



Watch Video Solution

321. If f(x) is continuous at x=1, where $f(x)=\left\{egin{array}{ll} k+x, ext{ for } & x<1 \\ 4x+3, ext{ for } & x\geq 1 \end{array} ight.$ then k =

A. 7

B. 8

C. 6

D. -6

Answer: C



322. If
$$f(x)$$
 is continuous at $x=0$, where $f(x)=egin{cases} x^2+1, & ext{for} & x\geq 0 \ 2\sqrt{x^2+1}+k, & ext{for} & x<0 \end{cases}$, then $k=$

C. -1

Answer: C



323. If f(x) is continuous at x=0, where

$$f(x)=\left\{egin{aligned} kig(x^2-2ig), & ext{for} & x\leq 0\ 4x+1, & ext{for} & x>0 \end{aligned}
ight.$$
 , then $k=$ A. $rac{1}{2}$

B.
$$\frac{-1}{2}$$

C. 2

D. -2

Answer: B



Watch Video Solution

324. If f(x) is continuous at x=0, where

$$f(x)=egin{cases} x^2+lpha,\, ext{for}\ \ x\geq 0\ 2\sqrt{x^2+1}+eta,\, ext{for}\ \ x<0 \end{cases}$$
 and $figg(rac{1}{2}igg)=2$, then

A.
$$\alpha=rac{-1}{4}, eta=rac{7}{4}$$

B.
$$lpha=rac{-7}{4},eta=rac{1}{4}$$

C.
$$lpha=rac{1}{4},eta=rac{-7}{4}$$

D.
$$\alpha=rac{7}{4}, eta=rac{-1}{4}$$

Answer: D



325. If
$$f(x)$$
 is continuous at $x=3$, where

$$f(x)=\left\{egin{array}{l} rac{x^2-9}{x-3}+lpha, ext{for} & x>3 \ 5, ext{for} & x=3 \ 2x^2+3x+eta, ext{for} & x<3 \end{array}
ight.$$
 , then

A.
$$lpha=\,-\,1,eta=\,22$$

B.
$$lpha=1,eta=-22$$

C.
$$lpha=-1,eta=-22$$

D.
$$lpha=1,eta=22$$

Answer: C



Watch Video Solution

 $f(x) = \left\{ egin{array}{ll} 5, ext{if} & x \leq 2 \ ax+b, ext{if} & 2 < x < 10 \end{array}
ight.$, then

326. If f(x) is continuous at x=2 and x=10, where

$$\mathsf{A.}\,a=2,b=1$$

B.
$$a = -2, b = -1$$

C.
$$a = 2, b = -1$$

D.
$$a = -2, b = 1$$

Answer: A



Watch Video Solution

327. If f(x) is continuous at x=1, where $f(x)=\left\{ egin{align*} kx^2, & ext{for} & x\geq 1 \\ 4, & ext{for} & x<1 \end{array} ight.$

then k =

B. 4

C. -2

D. ± 2

Answer: B



328. If f(x) is continuous on [0, 8] , where

[0,

3], where

$$f(x) = \left\{egin{array}{l} x^2+ax+6, ext{ for } & 0 \leq x < 2 \ 3x+2, ext{ for } & 2 \leq x \leq 4 \ 2ax+5b, ext{ for } & 4 < x \leq 8 \end{array}
ight.$$
 , then

A.
$$a = -1, b = \frac{22}{5}$$

B.
$$a = -1, b = \frac{-8}{5}$$

C.
$$a = -1, b = \frac{-22}{5}$$

$$\mathsf{D}.\,a=1,b=\frac{8}{5}$$

Answer: A



329. If
$$f(x)$$
 is continuous in $f(x)=egin{cases} 3x-4, & ext{for} & 0\leq x\leq 2 \ 2x+k, & ext{for} & 2< x< 3 \end{cases}$, then $k=$

C. 2

D. -2

Answer: D



Watch Video Solution

330. If f(x) continuous on its domain, where f(x) for x < 2

$$f(x) = \left\{ egin{array}{ll} 6, ext{for} & x \leq 2 \ ax+b, ext{for} & 2 < x < 10 ext{, then} \ 22, ext{for} & x \geq 10 \end{array}
ight.$$

A.
$$a = 3, b = 1$$

B.
$$a = 2, b = -1$$

C.
$$a = 3, b = -1$$

D.
$$a = 2, b = 2$$

Answer: D



331. If f (x) is continuous on 0-4,2], defined as

$$f(x) = 6b - 3ax$$
, for $-4 \le x < -2$

$$= 4x + 1$$
, for $-2 \le x \le 2$,

find the value of a+b.

A.
$$\frac{7}{6}$$

$$\mathsf{B.}\,\frac{-7}{6}$$

C.
$$\frac{9}{2}$$
D. $\frac{-9}{2}$

Answer: B



Watch Video Solution

332. If f(x) is continuous at x=3, where $f(x)=\displaystyle\frac{ax+1,\, {
m for}\ \, x\leq 3}{bx+3,\, {
m for}\ \, x>3}$, then

A.
$$a+b=rac{2}{3}$$

Watch Video Solution

Answer: C

 $\operatorname{B.} a + b = \frac{-2}{3}$

 $\mathsf{C.}\,a-b=\frac{2}{3}$

D. $a - b = \frac{-2}{3}$

- **333.** If f(x) is continuous in [-2, 2], where $f(x)= \left\{egin{array}{ll} x+a, & ext{for} & x<0 \ x, & ext{for} & 0\leq x<1 \ b-x, & ext{for} & x\geq 1 \end{array}
 ight.$
- then a + b =

A. 0

B. -2

 $\mathsf{C}.\pm 2$

D. 2

- Answer: D

334. If
$$f(x)=\left\{egin{array}{ll} rac{\sqrt{1+kx}-\sqrt{1-kx}}{x} &, & ext{for}-1\leq x<0 \ 2x^2+3x-2 &, & ext{for}0\leq x\leq 1 \end{array}
ight.$$

A. -1

B. -2

C. -3

D. -4

Answer: B



Watch Video Solution

335. If the function $f\!:\!R o R$ given by

$$f(x)=\left\{egin{array}{ll} x+a, & ext{if} & x\leq 1 \ 3-x^2, & ext{if} & x>1 \end{array}
ight.$$
 is continuous at x = 1, then a is equal to

A. 2

B. 1

C. 4

D. 3

Answer: B



Watch Video Solution

336. If
$$f(x)=egin{cases} ax^2-b, & ext{for} & 0\leq x<1 \ 2, & ext{for} & x=1 \ x+1, & ext{for} & 1< x\leq 2 \end{cases}$$
 is continuous at $x=1$, then

the most suitable values of a, b are

A.
$$a = 2, b = -2$$

B.
$$a = -1$$
, $b = -1$

$$C. a = 1, b = 1$$

D.
$$a = 1, b = -1$$

Answer: D



337. If the function and the derivative of the function f(x) is everywhere continuous and is given by

$$f(x)=\left\{egin{array}{ll} bx^2+ax+4, ext{ for } & x\geq & -1\ ax^2+b, ext{ for } & x< & -1 \end{array}
ight.$$
 , then

A.
$$a=3,\,b=2$$

B.
$$a = 2, b = 3$$

C.
$$a = -2, b = -3$$

D.
$$a = -3, b = -2$$

Answer: B



Watch Video Solution

338. If f(x) is continuous at x=2, where $f(x)=\left\{ egin{align*} 4x-3, & ext{for} & x<2 \\ kx+7, & ext{for} & x>2 \end{array}
ight.$ then k=

B. 1

C. -6

D. 6

Answer: A



Watch Video Solution

339. If f(x) is continuous at x=0, where

$$f(x)=\left\{egin{aligned} rac{1-\cos4x}{x^2}, & ext{for} & x<0 \ k, & ext{for} & x=0 \ rac{\sqrt{x}}{\sqrt{16+\sqrt{x}}-4}, & ext{for} & x>0 \end{aligned}
ight.$$
 , then $k=$

$$\sqrt{16+\sqrt{x}}-4$$

A. 2

B. 0

C. 4

D. 8

Answer: D



If f(x) is continuous

at x=0, where

$$f(x)=\left\{egin{array}{l} rac{\sin 4x}{5x}+a, ext{for} & x>0 \ x+4-b, ext{for} & x<0 ext{ , then} \ 1, ext{for} & x=0 \end{array}
ight.$$

A.
$$a=rac{1}{5},b=3$$

B.
$$a = \frac{-1}{5}, b = -3$$

C.
$$a = \frac{1}{5}, b = -3$$

D.
$$a = \frac{-1}{5}, b = 3$$

Answer: A



Watch Video Solution

341. If
$$f(x)=rac{\sin\pi x}{x-1}+a, \ \ ext{for} \ \ x<1$$

$$=2\pi$$
, for $x=1$

$$=rac{1+\cos\pi x}{\pi}(1-x)^2+b,~~{
m for}x>1$$

is continuous at x = 1, find a and b

C.
$$a=\pi, b=rac{5\pi}{2}$$

D. $a=3\pi, b=rac{5\pi}{2}$

A. $a = \pi, b = \frac{3\pi}{2}$

B. $a = 3\pi, b = \frac{3\pi}{2}$

Answer: B



Watch Video Solution

342. If
$$f(x)$$
 and $f'(x)$ are continuous at $x=\frac{\pi}{6}$, where $f(x)=\begin{cases} \sin 2x, & \text{if } x<\frac{\pi}{6}\\ ax+b, & \text{if } x>\frac{\pi}{6} \end{cases}$, then

A. $a = -2, b = \frac{\sqrt{3}}{2} + \frac{\pi}{2}$

$$= \left\{ egin{array}{ll} \sin 2x, & ext{if} & x < rac{\pi}{6} \ ax + b, & ext{if} & x > rac{\pi}{6} \end{array}
ight.$$
 , then

B.
$$a=2, b=rac{\sqrt{3}}{2}-rac{\pi}{3}$$
C. $a=-1, b=rac{\sqrt{3}}{2}+rac{\pi}{6}$

D.
$$a=1, b=rac{\sqrt{3}}{2}-rac{\pi}{6}$$

Answer: D

343. If
$$f(x)$$
 is continuous at $x=0$, where

A.
$$a = -2, b = 0, c = 0$$

C.
$$a=-2, b
eq 0, c=0$$

B. a = -2, b = R, c = 0

D.
$$a = -2, b = 0, c \neq 0$$

Answer: C



344. If f(x) is continuous at x=0, where

$$f(x)=\left\{egin{array}{l} rac{\sin{(\,a+1\,)\,x+\sin{x}}}{x},\,{
m for}\ \ \, x<0 \ c,\,{
m for}\ \ \, x=0 \ rac{\sqrt{x+bx^2}-\sqrt{x}}{b\sqrt{x}},\,{
m for}\ \ \, x>0 \ \end{array}
ight.$$
 , then

A.
$$a = -2, b = R, c = 0$$

B.
$$a = -2, b \neq 0, c = 0$$

C.
$$a=rac{-3}{2}, b=R, c=rac{1}{2}$$

D.
$$a = \frac{-3}{2}$$
, $b = R - \{0\}$, $c = \frac{1}{2}$

Answer: D



Watch Video Solution

345. If f(x) is continuous on [-2, 2], where

$$f(x) = \left\{ egin{array}{l} rac{\sin ax}{x} + 2, ext{ for } -2 \leq x < 0 \ 3x + 5, ext{ for } 0 \leq x \leq 1 \ \sqrt{x^2 + 8} - b, ext{ for } 1 < x < 2 \end{array}
ight.$$
 , then $a + b =$

A. -15

Answer: D



Watch Video Solution

346. The values of a and b so that the function

$$f(x) = egin{cases} x + a\sqrt{2}\sin x, & 0 \leq x < \pi/4 \ 2x\cot x + b, & \pi/4 \leq x \leq \pi/2 \ a\cos 2x - b\sin x, & \pi/2 < x \leq \pi \end{cases}$$
 is continuous for

 $x \in [0,\pi]$, are

A.
$$a = \frac{-\pi}{6}, b = \frac{\pi}{12}$$

$$\mathrm{B.}\,a=\frac{\pi}{6},b=\frac{-\pi}{12}$$

C.
$$a=rac{-\pi}{6}, b=rac{-\pi}{12}$$

$$\mathrm{D.}\,a=\frac{\pi}{6},b=\frac{\pi}{12}$$

Answer: B



Watch Video Solution

347. If f(x) is continuous over $[-\pi, \pi]$, where f(x) is defined as

$$f(x) = egin{cases} -2\sin x &, & -\pi \leq x \leq rac{-\pi}{2} \ lpha\sin x + eta &, & -rac{\pi}{2} < x < rac{\pi}{2} \ \cos x &, & rac{\pi}{2} \leq x < \pi \end{cases}$$

then α and β equals

A.
$$\alpha=1,\beta=1$$

B.
$$\alpha = -1$$
, $\beta = -1$

$$C. \alpha = -1, \beta = 1$$

D.
$$\alpha = 1$$
, $\beta = -1$

Answer: C



348. If
$$f(x)$$
 is continuous in [-2, 2], where $\int rac{\sin ax}{x} - 1$, for $-2 \le x < 0$

$$f(x)= egin{cases} rac{\sin ax}{x}-1, ext{ for } -2 \leq x < 0 \ 2x+1, ext{ for } 0 \leq x \leq 1 \ 2b\sqrt{x^2+3}-1, ext{ for } 1 < x \leq 2 \end{cases}$$
 , then $a+b=$

A. 3

B. 1

C. 4

D. 2

Answer: C



Watch Video Solution

349. If f(x) is continuous in $(-\infty,6)$, where $f(x) = egin{cases} 1+\sin\Bigl(rac{\pi x}{2}\Bigr), & ext{for} & -\infty < x \leq 1 \ ax+b, & ext{for} & 1 < x < 3 \ 6 an\Bigl(rac{\pi x}{12}\Bigr), & ext{for} & 3 \leq x < 6 \end{cases}$, then

A. a = 2, b = 0

B. a = 0, b = 2

C. a = 1, b = 1

D. a = 2, b = 1

Answer: A



Watch Video Solution

350. If $f(x)=egin{cases} ax+1, & x\leq rac{\pi}{2} \ \sin x+b, & x>rac{\pi}{2} \end{cases}$ is continuous, then

A.
$$\frac{a\pi}{2} = b$$

B.
$$\frac{b\pi}{2}=a_a$$

C.
$$a=b=rac{\pi}{2}$$

D.
$$a=b=rac{\pi}{2}+1$$

Answer: A



351. If
$$f(x)=\left\{egin{array}{l} rac{e^{rac{1}{x}}-1}{e^{rac{1}{x}}+1}, ext{ for } & x
eq 0 \ 1, ext{ for } & x=0 \end{array}
ight.$$
 , then f is

A. continuous at x=0

B. discontinuous at x=0

C. continuous if f(0) = -1

D. discontinuous if f(0) = -1

Answer: B



Watch Video Solution

352. If f(x) is continuous at x=0, where f(x) $\begin{cases} rac{1}{1+e^{rac{1}{x}}}, ext{ for } x
eq 0 \\ k, ext{ for } x
eq 0 \end{cases}$, then k=

A. 1

В. О

C. -1

D. does not exists

Answer: D



Watch Video Solution

353. The function $f(x)=k(k\in R)$ at every $x\in R$ is

A. continuous on $R^{\,+}$

B. continuous on R

C. discontinuous on $R^{\,+}$

D. discontinuous on R

Answer: B



354. The composition of two continuous functions is a continuous function.

A. discontinuous

B. continuous

C. continuous for some real numbers

D. discontinuous for some real numbers

Answer: B



Watch Video Solution

355. If $f(x) = \sin x$, then f is

A. discontinuous for all $x \in R$

B. continuous for all $x \in R^+$

C. continuous for all $x \in R^-$

D. continuous for all $x \in R$

Answer: D



Watch Video Solution

356. If $f(x) = \sin x^2$, then f is

A. continuous for all $x \in R$

B. discontinuous for all $x \in R$

C. continuous for only $x \in R^+$

D. continuous for only $x \in R^-$

Answer: A



Watch Video Solution

357. If $f(x)=a^x,\,a>0$, then f is

A. continuous for all $x \in R^+$

B. continuous for all $x \in R^-$

C. continuous for all $x \in R$

D. discontinuous for all $x \in R$

Answer: C



Watch Video Solution

358. The function $f(x) = \log_c x$, where c>0, x>0 is

A. continuous in $(-\infty,\infty)$

B. continuous in $(0, \infty)$

C. discontinuous in $(-\infty,\infty)$

D. discontinuous in $(0,\infty)$

Answer: B



359. The rational function $f(x)=rac{g(x)}{h(x)},$ h(x)
eq 0 is

A. continuous

B. discontinuous for integer values only

C. continuous for integer values only

D. continuous for imaginary values only

Answer: A



Watch Video Solution

360. The function f(x) = |x| is

A. continuous on R

B. discontinuous on R

C. continuous on only $R^{\,+}$

D. discontinuous only $R^{\,+}$

Answer: A



Watch Video Solution

361. The function $f(x) = |\cos x|$ is

A. continuous on R

B. discontinuous on R

C. continuous on only $R^{\,+}$

D. discontinuous only $R^{\,+}$

Answer: A



Watch Video Solution

362. If f(x) = |x|, then at x = 0

A. discontinuous

B. continuous

C. $\lim_{x \to 0} f(x) = 1$

D. $\lim_{x\to 0} f(x) = -1$

Answer: B



Watch Video Solution

363. If f(x) is continuous at x=3, where $f(x)=\left\{egin{array}{l} |x-3|, \ { m for} \quad x eq 3 \\ k, \ { m for} \quad x=3 \end{array} ight.$, then k =

A. 1

B. 0

C. -1

D. does not exist

Answer: B



364. If f(x)=[x], where x is the greatnest integer not greater than x, in (-4, 4), then f(x) is

A. discontinuous at x=0, only in (-4, 4)

B. continuous at x=0 only in (-4,4)

C. discontinuous at every integral point of (-4,4)

D. continuous at every integral point of (-4,4)

Answer: C



Watch Video Solution

365. If $f(x) = |(1+x)|x \mid$ |, then f is

A. discontinuous for all $x \in R$

B. continuous for all $x \in R$

C. continuous for all $x \in R^+$

D. continuous for all $x \in R^-$

Answer: B



Watch Video Solution

- **366.** If f(x) = |x| + |x-1|, then in [-1, 2]
 - A. f is continuous except at x=0
 - B. f is continuous except at $x=1\,$
 - C. f is continuous
 - D. f is discontinuous

Answer: C



A. only x>0

B.
$$x\in (-\infty,\infty)-\{0\}$$

 $\mathsf{C}.\,x\in(-\infty,\infty)$

D. no values of x

Answer: C



Watch Video Solution

368. The function $f(x) = |x| \, orall x \in R$ is

B. continuous for all $x \in R^+$

A. continuous for all $x \in R^-$

C. continuous for all $x \in R$

D. discontinuous for all $x \in R$

Answer: C



369. If
$$f(x) = 2x - |x|$$
, then at $x = 0$

A. f is continuous

B. f is discontinuous

C.
$$\lim_{x \to 0^-} f(x) = 3$$

D.
$$\lim_{x \to 0^+} f(x) = 1$$

Answer: A



Watch Video Solution

370. If
$$f(x)=\left\{egin{array}{l} rac{x}{|x|}, ext{for} & x
eq 0 \ c, ext{for} & x=0 \end{array}
ight.$$
 , then f is

A. continuous at x=0

B. discontinuous at x=0

C. continuous if f(0) = 1

D. continuous if f(0) = -1

Answer: B



Watch Video Solution

371. If
$$f(x) = \left\{ egin{array}{l} rac{|x|}{x}, ext{ for } & x
eq 0 \ 1, ext{ for } & x = 0 \end{array}
ight.$$
 , then

A.
$$\lim_{x\, o\,1^-}\,f(x)=1$$

B.
$$\lim_{x \to 1^+} f(x) = -1$$

C. f is discontinuous at origin

D. f is continuous at origin

Answer: C



372. If
$$f\!:\!R o R$$
 is defined by (where [.] is g.i.f) $f(x)[x-3]+|x-4|$ for

$$x \in R$$
 then $\lim_{x o 3^-} f(x) =$

B. -1

C. -2

D. 1

Answer: A



Watch Video Solution

373. If $f(x)=\left\{egin{array}{l} rac{\cot x-\cos x}{\left(\pi-2x
ight)^3}, ext{ for } & x
eq rac{\pi}{2} \\ k, ext{ for } & x=rac{\pi}{2} \end{array}
ight.$ is continuous at $x=rac{\pi}{2}$, where ,

then k =

A.
$$\frac{1}{4}$$

c.
$$\frac{1}{16}$$

D. $\frac{1}{8}$

Answer: C



Watch Video Solution

374. If $f(x) = \log(\sec^2 x)^{\cot 2}$ for x eq 0 for x=0 is continuous at x=0, then

K is

A.
$$e^{-1}$$

B. 1

C. e

D. 0

Answer: B

