**MATHEMATICS**

**PAGEMAKER10**

**LIMIT**

Q1. Evaluate the left hand and right-hand limit of the function

f(x) = at x = 4

(a) L.H.L = 1

(b) R.H.L = –1

(c) R.H.L = 1

(d) none

L1Difficulty1

Qtag Mathematics

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Q2. Evaluate 

(a)

(b)

(c)

(d)

L1Difficulty1

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Q3. Evaluate 

(a)

(b)

(c) ±

(d) none

L1Difficulty1

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Q4. Evaluate 

(a)

(b)

(c)

(d) none

L1Difficulty1

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Q5. Evaluate 

(a) 3

(b) 6

(c) 9

(d) 12

L1Difficulty1

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Q6.

(a) 4

(b) 2

(c) 6

(d) 0

L1Difficulty1

Qtag Mathematics

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Q7. Evaluate 

(a) log4

(b) lo16

(c) log2

(d) 0

L1Difficulty1

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Q8. f(x) be a twice-differentiate function and Calculate 

(a) 6

(b) 3

(c) 9

(d) 0

L1Difficulty1

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Q9. Evaluate 

(a) e4

(b) e3

(c) e2

(d) e

L1Difficulty1

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Q10. The points of discontinuity of f(x) =

(a)

(b)

(c)

(d) 0

L1Difficulty1

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**Solutions**

S1. Ans. (c)

Sol.

R.H.L = 1

S2. Ans. (a)

Sol.



= 

S3. Ans. (b)

Sol.





S4. Ans. (c)

Sol.



S5. Ans. (a)

Sol.



S6. Ans. (b)

Sol.





S7. Ans. (a)

Sol.



S8. Ans. (a)

Sol.





6

S9. Ans. (d)

Sol.





S10. Ans. (a)

Sol.

2sin

sin

**LEVEL-II**

Q1. Find value of k if f(x) = is continuous at x = 4 ?

(a) 156

(b) 256

(c) 0

(d) none

L3Difficulty3

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Q2. Let f(x) = for what value of a f(x) is continuous at x = 0.

(a) , 1

(b) , –1

(c) , +1

(d) none

L3Difficulty3

Qtag Mathematics

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Q3. Evaluate 

(a) e

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q4. Evaluate 

(a) 4

(b) 6

(c) 8

(d) 2

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q5. Evaluate 

(a)

(b)

(c) 0

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q6. Point of iscontinuous is f(x) = 

(a) ± 1

(b) ± 2

(c) ± 3

(d) 0

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q7. Check differentiability of f(x) = , at x 0

= 0, x = 0

(a) differentiable

(b) non-differentiable

(c) can not say anything

(d) none

L3Difficulty3

Qtag Mathematics

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Q8. The function f(x) = 0 is continuous at x = 0, then the value of f(0) is

(a) 2log3

(b) (log3

(c) log6

(d) none

L3Difficulty3

Qtag Mathematics

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Q9. f(x) =  is continuous at

(a) x = 0 only

(b) x = 2 only

(c) x = 0 and 2

(d) none

L3Difficulty3

Qtag Mathematics

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Q10. The number of points of non-differentiable for f(x) = max is

(a) 4

(b) 3

(c) 2

(d) 5

L3Difficulty3

Qtag Mathematics

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**Solutions**

S1. Ans. (b)

Sol.

f(x) = 

= 

S2. Ans. (a)

Sol.

f(x) = ,

= , x = 0



 =

a =

,

S3. Ans. (b)

Sol.





S4. Ans. (d)

Sol.

 = 2

S5. Ans. (b)

Sol.









=

S6. Ans. (a)

Sol.

f(x) = 

= 

= –1, 0 x2 < 1

0, x2 = 1

1, x2 > 1

= 1, x < –1

0, x = –1

–1, –1 < x < 1

0, x = 1

1, x > 1

point of iscontinuity is x = ± 1

S7. Ans. (a)

Sol.

f(x) = 





S8. Ans. (b)

Sol.

f(x) is continuous at x = 0

f(x) = f(0)





S9. Ans. (c)

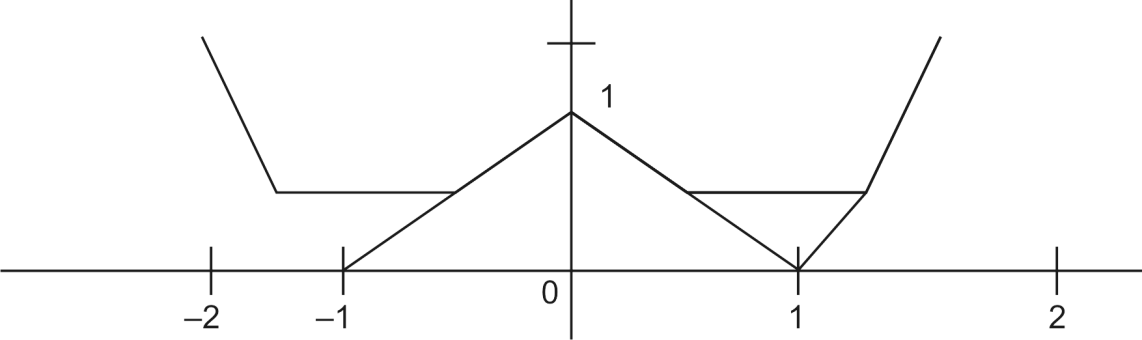
Sol.

f(x) = 



S10. Ans. (d)

Sol.

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x = –2, –1, 0, 1, 2

**LEVEL-III**

Q1. Let f(x) = , , then f is

(a) differentiable both at x = 0 and at x = 2

(b) differentiable at x = 0 but not differentiable at x = 2

(c) not differentiable at x = 0 but differentiable at x = 2

(d) differentiable neither at x = 0 nor at x = 2

L5Difficulty5

Qtag Mathematics

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Q2. Let g(x) = log(f(x)) where f(x) is a twice differentiable positive function on (0, such that f( = x f(x). Then, for N = 1, 2, 3, ...,

g” =

(a)

(b)

(c)

(d)

L5Difficulty5

Qtag Mathematics

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Q3. equals

(a)

(b)

(c)

(d) 4f(2)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q4. is

(a) 0

(b) –1

(c) 1

(d) 2

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q5. The function given by y = is differentiable for all real numbers except the points

(a) {0, 1, –1}

(b) ± 1

(c) 1

(d) –1

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q6. If  = 0, where n is nonzero real number, then a is equal to

(a) 0

(b)

(c) n

(d) n+1/n

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q7.  , given that f’ (2) = 6 and f’ (1) = 4

(a) does not exist

(b) is equal to –3/2

(c) is equal to 3/2

(d) is equal to 3

L5Difficulty5

Qtag Mathematics

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Q8. The domain of the derivative of the function f(x) = is

(a) R – {0}

(b) R – {1}

(c) R – {– 1}

(d) R – {– 1, 1}

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q9. The integer n for which  is a finite non-zero number is

(a) 1

(b) 2

(c) 3

(d) 4

L5Difficulty5

Qtag Mathematics

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Q10. Let f : R R be such that f(1) = 3 and f’(1) = 6. Then  equals

(a) 1

(b)

(c)

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (b)

Sol.

f’(0) = 

= 

= h cos = 0

so, f(x) is differentiable at x = 0

f’() = 

= 

= 

f’(2+ sin

=  sin

=  sin

Again, f’(

= 

= 

= 

= 

= –

S2. Ans. (a)

Sol.

g(x+1) = log(f(x+1)) = logx+log(f(x))

= logx + g(x)

g –

–4

....

....

Summing up all terms

Hence, .

S3. Ans. (a)

Sol.

Let L =  L =

S4. Ans. (c)

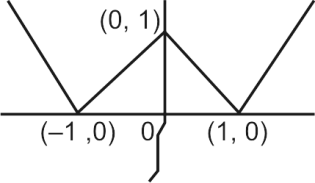
Sol.

 = 1 (using L’ Hospital’s rule).

S5. Ans. (a)

Sol.

From the graph, the function is not differentiable at x = –1, 0, 1

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S6. Ans. (d)

Sol.

n n((

S7. Ans. (d)

Sol.



S8. Ans. (d)

Sol.

f(x) is discontinuous at x = 1, – 1, hence non-differentiable.

S9. Ans. (c)

Sol.

 is non-zero n = 3.

S10. Ans. (c)

Sol.

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