**MATHEMATICS**

**PAGEMAKER10**

**differentiation**

Q1. Find the derivative of by first principle.

(a)

(b)

(c)

(d)

L1Difficulty1

Qtag Mathematics

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Q2. If y = then find

(a) –1

(b) 1

(c) 0

(d) none

L1Difficulty1

Qtag Mathematics

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Q3. f(x) = x|x|, then prove that f’(x) = 2|x|

(a) 2|x|

(b) –2|x|

(c) 0

(d) none

L1Difficulty1

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Q4. y = 1 + ................. + find is

(a) 1

(b) –1

(c) 0

(d) none

L1Difficulty1

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Q5. Find si(cos x) where 0 < x .

(a) –1

(b) 1

(c) 0

(d) 2

L1Difficulty1

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Q6. Find for .

(a)

(b)

(c)

(d) 0

L1Difficulty1

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Q7. Find for y = x sinx

(a) sin x logx + x cos x logx + sin x

(b) sin x

(c) cos x

(d) 0

L1Difficulty1

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Q8. Find for y = sin(x2+1)

(a) 2x cos(x2+1)

(b) 2x2 sin(x2+1)

(c) 0

(d) none

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Q9. Find for y =

(a) 2x

(b) 2

(c) 0

(d)

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Q10. Find for y =

(a)

(b)

(c)

(d) 0

L1Difficulty1

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**Solutions**

S1. Ans. (d)

Sol.

f(x) = , f(x+h) =





= 

= 

=  

= × 1 ×

S2. Ans. (a)

Sol.

y =

y =

y = 1 – x

S3. Ans. (a)

Sol.

f(x) = x2, x > 0

= – x2, x < 0

f’(x) = 2|x|

S4. Ans. (c)

Sol.

 = 1+ ............

S5. Ans. (a)

Sol.

y = 0 < x

S6. Ans. (b)

Sol.

y = ta

y = ta

y = < <

 =

S7. Ans. (a)

Sol.

 = x sin logx + x logx sin x + log x

S8. Ans. (a)

Sol.

y = sin(x2+1)

 (

S9. Ans. (a)

Sol.

 = sin

 =

S10. Ans. (d)

Sol.

 meets the -axis at (0, )

Again

At

 required tangent is or

**LEVEL-II**

Q1. Find for y = is

(a)

(b) 2si

(c)

(d) 0

L3Difficulty3

Qtag Mathematics

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Q2. Find for y = log where x =

(a) 1

(b) –1

(c) 2

(d) –2

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q3. If x then is

(a)

(b)

(c) x+1

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q4. If , then is

(a)

(b)

(c)

(d) 0

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q5. If , find is

(a)

(b)

(c)

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q6. If y = then is

(a)

(b) 2

(c) 3

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q7. If x = , y = find at t = 2.

(a)

(b)

(c)

(d) 0

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q8. Find for y = is

(a)

(b) (1 + logx)

(c)

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q9. If , then is

(a)

(b) xlogy–y

(c) ylogx – x

(d) none

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

Q10. If x = ........... where x > 0 find is

(a)

(b)

(c)

(d)

L3Difficulty3

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (a)

Sol.

 =

S2. Ans. (c)

Sol.

 =

 = 2

S3. Ans. (b)

Sol.

x =

x2

 =

S4. Ans. (a)

Sol.

 =

y logx = x – y

y =

 =

S5. Ans. (a)

Sol.

 =

 =

S6. Ans. (d)

Sol.

y2 = sin x + y

y2 – y = sin x

2 = = cos x

 =

S7. Ans. (b)

Sol.

 =

=

 =

=

 =

S8. Ans. (a)

Sol.

log y = x logx

 = (1+logx)

 = (1+logx)

S9. Ans. (a)

Sol.

x logy = y logx

 + logy = + logx ×

 =

S10. Ans. (b)

Sol.

x =

logx =

 =

=

**LEVEL-III**

Q1. dx is equal to

(a) log sin 3x – log sin 5x + c

(b) log sin 3x + log sin 5x + c

(c) log sin 3x – log sin 5x + c

(d) 3 log sin 3x – 5 log sin 5x + c

L5Difficulty5

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Q2. dx is equal to

(a)

(b) sin (x/2) + cos (x/2) + C

(c) cos (x/2) – sin (x/2) + C

(d) 2

L5Difficulty5

Qtag Mathematics

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Q3. The primitive of the function x|cos x| when < x < is given by

(a) cos x + x sin x + C

(b) – cos x – x sin x + C

(c) x sin x – cos x + C

(d) None of these + C

L5Difficulty5

Qtag Mathematics

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Q4. is equal to

(a) +c

(b) +c

(c) +c

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q5. dx is equal to

(a) cos x + cos 2x – cos 3x + C

(b) cos x – cos 2x – cos 3x + C

(c) cos x + cos 2x + cos 3x + C

(d) cos x – cos 2x + cos 3x + C

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q6. If = dx, then

(a) + C

(b) x (ln x

(c) x (ln x

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q7. dx is equal to

(a)

(b)

(c)

(d) None of these

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q8. Let Then

(a)

(b)

(c)

(d)

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

Q9. If , then

(a) A = , B =

(b) A = , B =

(c) A = , B =

(d) None of these

L5Difficulty5

Qtag Mathematics

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Q10. If dx = a ln |x| + b ln |, then

(a) a = 1, b =

(b) a = –1, b =

(c) a = 1, b =

(d) a = –1, b =

L5Difficulty5

Qtag Mathematics

Qcreator Pagemaker10

**Solutions**

S1. Ans. (c)

Sol.

 dx

 d

 dx

= log

S2. Ans. (a)

Sol.

I = dx

= dx = –2

S3. Ans. (b)

Sol.

f(x) = x|cos x|, < x < = – x cos x, because cos x is negative in .

 the required primitive function =

Now, use integration by parts

S4. Ans. (a)

Sol.

I =

Putting

 I =

 = (log

=

S5. Ans. (b)

Sol.

I =

=

=

= cos x

S6. Ans. (c)

Sol.

 dx

= x

S7. Ans. (b)

Sol.

Let I =

Putting x + 1

I = 2

= 2

= t

= t

S8. Ans. (c)

Sol.

Here,

and

On adding, we get 2

S9. Ans. (b)

Sol.

Here,

Let l +

=

=

=

=

=

= (1

S10. Ans. (c)

Sol.

I =

Diff. both sides, we get