Question Number : 57 Question Id : 640653520516 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

The compound word *swimming pool* is stressed on the _____.

Options :

6406531735351. ✔ First word

6406531735352. ✖ Second word

Sem1 Maths1

Section Id :	64065333910
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065373781
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 58 Question Id : 640653520517 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER 1: MATHEMATICS FOR DATA SCIENCE 1"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT ,PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531735353. ✔ YES

6406531735354. ✖ NO

Question Number : 59 Question Id : 640653520518 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Instructions:

•There are some questions which have functions with discrete valued domains (such as day, month, year etc). For simplicity, we treat them as continuous functions.
• For NAT type question, enter only one right answer even if you get multiple answers for that particular question.

Options :

6406531735355. ✔ Useful Data has been mentioned above.

6406531735356. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065373782

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653520519 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (60 to 61)

Question Label : Comprehension

Consider two functions $f(x) = x^{4\log_x x}$ and $g(x) = \sqrt{2x}$ in their respective domains. Let $h(x) = (f \circ g)(x)$.
Use this information to answer the given subquestions.

Sub questions

Question Number : 60 Question Id : 640653520520 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531735357. ✔ Domain of the function $f(x)$ is the interval $(0, 1) \cup (1, \infty)$.

6406531735358. ✔ $h(x) = \left(\sqrt{2x}\right)^{4\log_{\sqrt{2x}}\sqrt{2x}}$

6406531735359. ✖ $h(x) = \left(\sqrt{2x}\right)^{4\log_{\sqrt{x}}\sqrt{2x}}$

6406531735360. ✖ Domain of the function $\frac{1}{\sqrt{g(x)}}$ is the interval $[0, \infty)$.

Question Number : 61 Question Id : 640653520521 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

For what value of *x* does the function *h(x)* have value 64?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	3
Sub-Section Id :	64065373783
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 62 Question Id : 640653520522 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531735362. ✔ $\log_3 2 < 1$

6406531735363. ✖ $\frac{1}{3} < \log_3 2 < \frac{1}{2}$

6406531735364. ✔ $\log_3 2$ is an irrational number.

6406531735365. ✖ $\log_a b < 1$, if $a > 1, b > 1$ and $b > a$.

Sub-Section Number :	4
Sub-Section Id :	64065373784
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653520523 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (63 to 65)

Question Label : Comprehension

Consider the function $f(x) = e^{|x|}$. Use this information to answer the given subquestions

Sub questions

Question Number : 63 Question Id : 640653520524 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531735366. ✖ *f(x)* is an increasing function.

6406531735367. ✖ *f(x)* is a one-one function.

6406531735368. ✔ *f(x)* is not invertible.

6406531735369. ✔ *f(x)* is an even function.

Question Number : 64 Question Id : 640653520525 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531735370. ✖ $f(x)$ is differentiable at $x = 0$

6406531735371. ✔ $\lim_{x \to 0} f(x)$ exists

6406531735372. ✔ $f(x)$ is continuous in its domain

6406531735373. ✖ $\lim_{x \to 0} f(x) = 0$

Question Number : 65 Question Id : 640653520526 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is the graph of the function $f(x) = e^{|x|}$?

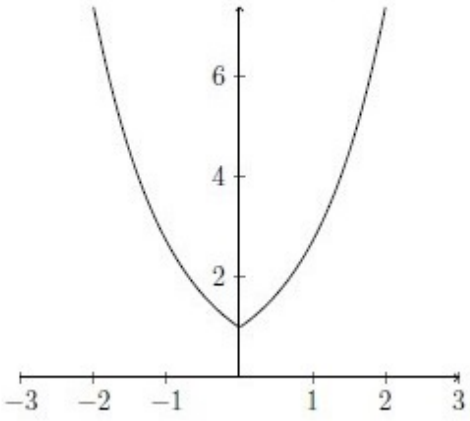

Figure (a)

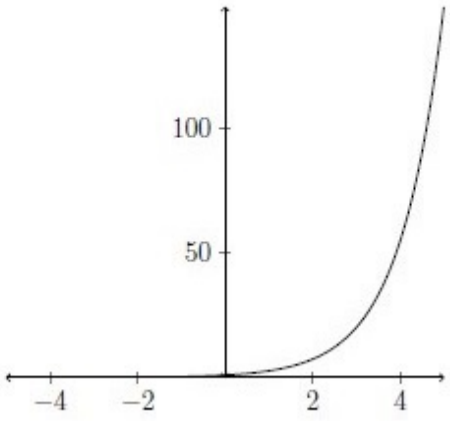

Figure (b)

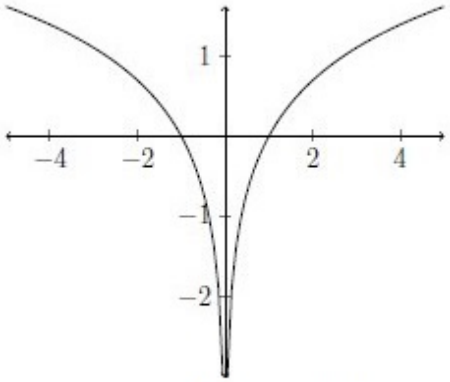

Figure (c)

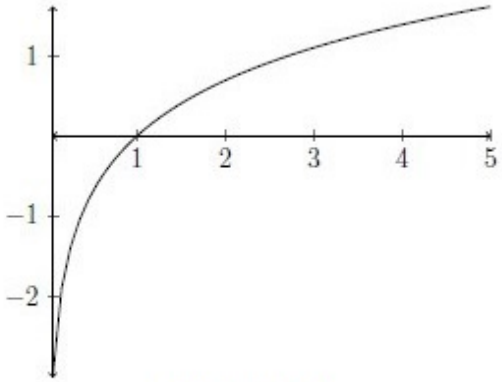

Figure (d)

Options :

6406531735374. ✔ Figure (a)

6406531735375. ✖ Figure (b)

6406531735376. ✖ Figure (c)

6406531735377. ✖ Figure (d)

Sub-Section Number :	5
Sub-Section Id :	64065373785
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 66 Question Id : 640653520527 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the number of solutions of the equation $2x^x = 2x$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	6
Sub-Section Id :	64065373786
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653520528 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (67 to 68)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 67 Question Id : 640653520529 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the limit of the following sequence.

$$\{a_n\} \text{ such that } a_n = \frac{2022 + 8 \times 2023^n}{2024 + 4 \times 2023^n}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 68 Question Id : 640653520530 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the limit of the following sequence.

$$\{a_n\} \text{ such that } a_n = \frac{8n^2 + 10n}{2n^2 + 6n - 7}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Id : 640653520531 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (69 to 70)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 69 Question Id : 640653520532 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the following limit.

$$\lim_{x \to 0} \frac{\sqrt{4+8x}-2}{x}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 70 Question Id : 640653520533 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the following limit.

$$\lim_{x \to 0^+} \frac{\sin 2x}{\sqrt{2x}}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Id : 640653520540 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (71 to 72)

Question Label : Comprehension

Consider the following graph of a function *(f(x)* in the interval [-2, 6]) in the Figure: 3, where bullet point represents the point included in the line segment and circle represents the point does not included in the line segment. Use this information to answer the given subquestions .

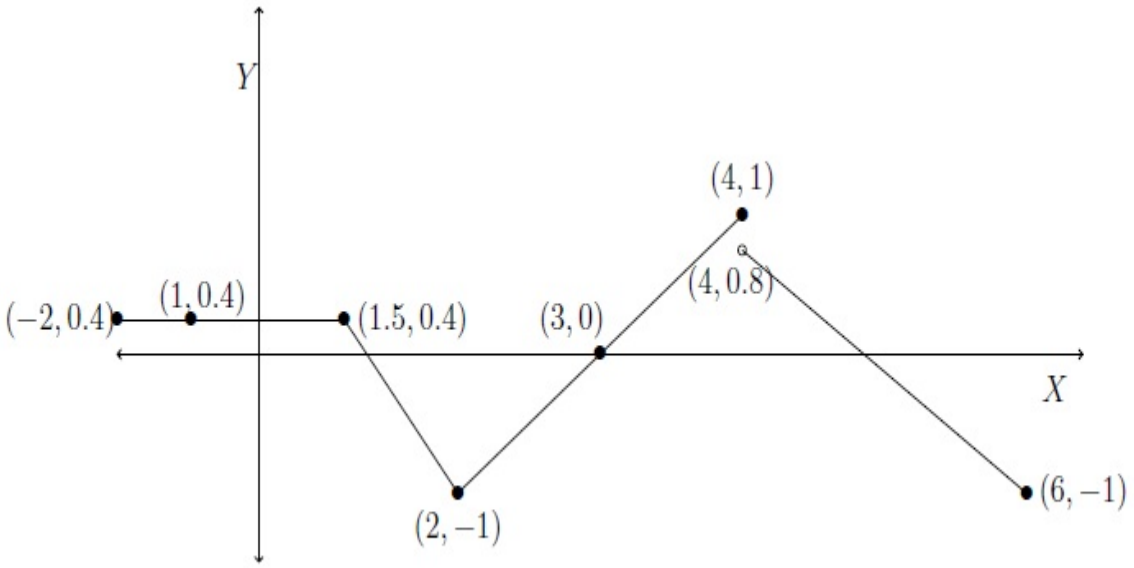

Figure: 3

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 71 Question Id : 640653520541 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $f'(1)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 72 Question Id : 640653520542 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

If $f'(3) = 1$, then which of the following is the linear approximation $(L_f(x))$ of the function at $x = 3$?

Options :

6406531735392. ✔ $L_f(x) = x - 3$

6406531735393. ✖ $L_f(x) = x + 3$

6406531735394. ✖ $L_f(x) = -x - 3$

6406531735395. ✖ $L_f(x) = -x + 3$

Sub-Section Number :	7
Sub-Section Id :	64065373787
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 73 Question Id : 640653520534 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following graph of a function *(f(x)* in the interval [-2, 6]) in the Figure: 1, where bullet point represents the point included in the line segment and circle represents the point does not included in the line segment. Use this information to answer the question.

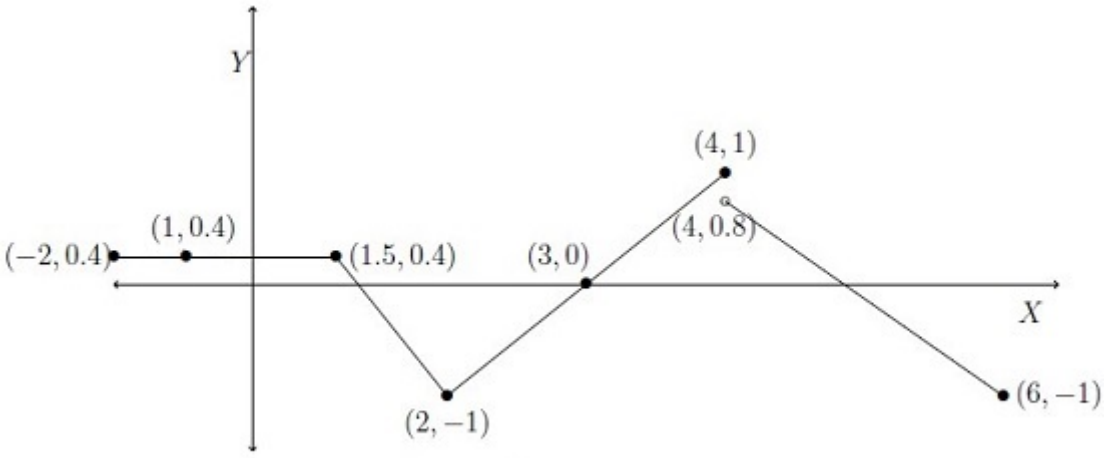

Figure: 1

Which of the following options is/are true?

Options :

6406531735383. ✖ Function *f(x)* is one-one in the interval [-2, 6].

6406531735384. ✖ Function *f(x)* is increasing in the interval [1.5, 2].

6406531735385. ✔ Function *f(x)* is invertible in the interval [2, 4].

6406531735386. ✔ Function *f(x)* is constant in the interval [-2, 1.5].

Sub-Section Number :	8
Sub-Section Id :	64065373788
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653520535 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (74 to 77)

Question Label : Comprehension

Consider the following graph of a function (*f*(*x*) in the interval [-2, 6]) in the Figure: 2, where bullet

point represents the point included in the line segment and circle represents the point does not included in the line segment.

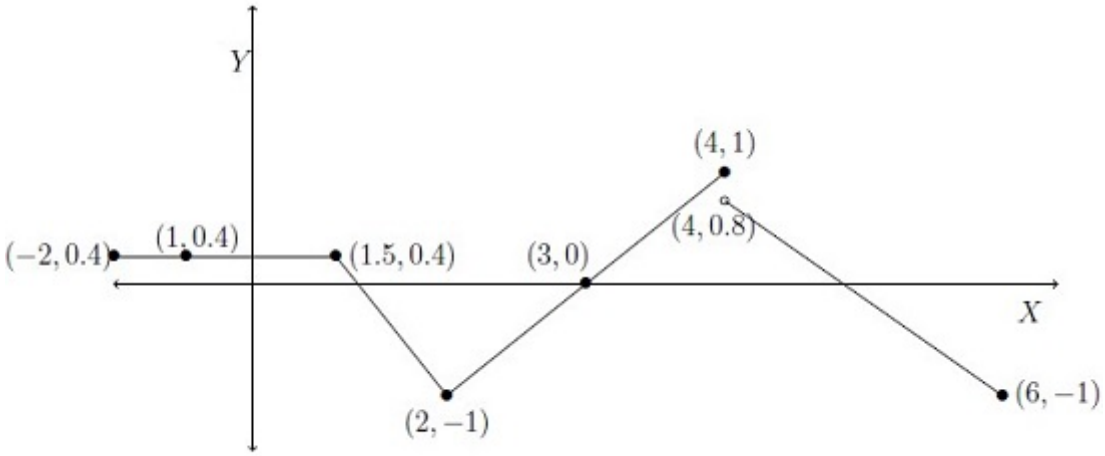

Figure: 2

Consider the function *f(x)* in the interval (-2, 6). Using the given information answer the subquestions.

Sub questions

Question Number : 74 Question Id : 640653520536 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the number of points where the function *f*(*x*) is not differentiable.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 75 Question Id : 640653520537 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the number of points where the function *f(x)* is not continuous.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 76 Question Id : 640653520538 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the left limit $\lim_{x \to 4^-} f(x)$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 77 Question Id : 640653520539 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the right limit $\lim_{x \to 4^+} 10f(x)$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Sem1 Statistics1

Section Id :	64065333911
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065373789
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 78 Question Id : 640653520543 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0