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Question 1

Question Type: **MultipleChoice**

v = f(x, y, z) is a real valued functionof 3 variables.

Express the partial derivative of v with respect to z in standard mathematical notation.

Options:

A- Option A

$$\frac{\partial v}{\partial xy}$$

B- Option B

$$\frac{\partial v}{\partial xy}$$

C- Option C

$$\frac{\partial v}{\partial xy}$$

D- Option D

$$\frac{\partial v}{\partial xy}$$

Answer:

B

Question 2

Question Type: MultipleChoice

Identifythe meaning of: | x | > 5

Options:

A- x is greater than 5.

B- x is greater than or equal to 5.

C- x is greater than 5 or x is less than -5.

D- x is greater than or equal to 5, or x is less than or equal to -5.

Answer:

C

Question 3

Question Type: MultipleChoice

A weekly pet insurance premium is given by a solution of the following equation:

4x2 - 11x - 3 = 0

Calculate the premium.

Options:

A- -1.00

B- -0.25

C- 0.75

D- 3.00

Answer:

D

Question 4

Question Type: **MultipleChoice**

Determinewhich of the following is the Maclaurin expansion (up to the second order term) of: e2x

Options:

A- Option A

$1 + 2x + 2x^2$

B- Option B

$1 + 2x + 2x^2$

C- Option C

$1 + 2x + 2x^2$

D- Option D

$1 + 2x + 2x^2$

Answer:

D

Question 5

Question Type: MultipleChoice

In a small island nation, local sea vessels are identified using "a letter and 4 digits" classification system. The "letter" can be any of the 26 letters in the English alphabet, A to Z, while the "digit" can be any number from 0 to 9. E.g: Z9835.

Calculate the probability of a sea vessel having an identification ending in "007".

Options:

A- 0.001

B- 0.002

C- 0.003

D- 0.504

Answer:

A

Question 6

Question Type: MultipleChoice

The first term of an arithmetic sequence is 12 and the ninth term is 68.

Calculate the sum of the first 18 terms.

Options:

A- 1,165

B- 1,287

C- 1,350

D- 1,413

Answer:

B

Question 7

Question Type: MultipleChoice

A and B are the stationary points of f(x).

f(x) = 2x3- x2- 8x + 8

A = (-1,13)

B = (4/3,8/27)

Determine whether each stationary point is a maximum, minimum or point of inflexion.

Options:

A- A is a maximumB is a minimum

B- A is a maximumB is a point of inflexion

C- A is a minimumB is a maximum

D- A is a point of inflexionB is a minimum

Answer:

A

Question 8

Question Type: **MultipleChoice**

Calculate the indefinite integral:

$$\int \frac{x^2}{x^3+4}dx$$

Options:

A- Option A

$$\frac{8x-x^4}{(x^3+4)^2}+c$$

B- Option B

$$\frac{8x-x^4}{(x^3+4)^2}+c$$

C- Option C

$$\frac{8x - x^4}{(x^3 + 4)^2} + c$$

D- Option D

$$\frac{8x - x^4}{(x^3 + 4)^2} + c$$

Answer:

B

Question 9

Question Type: **MultipleChoice**

Calculate the determinant of the product of thematrices given below:

$$\begin{pmatrix} 4 & 2 \\ 1 & 3 \end{pmatrix} \begin{pmatrix} -1 & 9 \\ 5 & -1 \end{pmatrix}$$

Options:

A- -0.00227

B- -60

C- -78

D- -440

Answer:

D

Question 10

Question Type: MultipleChoice

The variable s can take values between 2 and 6.

Identify which of the inequalities shown can be satisfied by at least one value of s.

Options:

A- s + 5 < 6

B- $s + 9 < 6$

C- $s - 6 > 2$

D- $s - 2 > 2$

Answer:

D