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Question 1

Question Type: MultipleChoice

Identify which of the following best describes the nature of a stationary point.

Options:

A- It is where the tangent of the graph of the function is horizontal.

B- It is the point where the maximum valueof the function is found.

C- It is the point where the minimum valueof the function is found.

D- It is the point where values of the function start to become more stable.

Answer:

A

Question 2

Question Type: MultipleChoice

Calculate the value of

$$\sum_{k=11}^{25} (2k - 1)$$

Options:

A- 259

B- 504

C- 525

D- 725

Answer:

C

Question 3

Question Type: **MultipleChoice**

A cat rescue centre keeps a record of how many kittens are born in each litter over a year. The bar chart summarises the figures.

Consider the mean, mode and median of the number of kittens per litter.

Determine which one of the statements is true.

Options:

A- {exhibit 3729}

B- The mean is greater than the mode.

C- The mode and median are the same.

D- The median is less than the mean.The median equals 4.5.

Answer:

C

Question 4

Question Type: **MultipleChoice**

State whatthe limit of a function with input variable xrepresents.

Options:

A- The limit represents the smallest value that the function can take over its considered range.

B- The limit represents the behaviour of a function as x approaches a certain value.

C- The limit represents the value of x for which the function is incalculable.

D- The limit represents the value of the function when x=0.

Answer:

B

Question 5

Question Type: MultipleChoice

An insurance company sells policies where, for each policy, the policyholder pays the first 50 of the cost of any claim. A claim reported to the insurance company takes some unknown value x.

Identify which of the mathematical expressions below represents the cost in to the insurance company of the claim.

Options:

A- x - 50

B- x

C- max(x, 50)

D- max(x - 50, 0)

Answer:

D

Question 6

Question Type: **MultipleChoice**

Calculate the total area enclosed by the x-axis and the function below, between x =1.5 and x = 2.

f(x) = 2x3

Options:

A- 2.734

B- 5.469

C- 8.000

D- 10.938

Answer:

B

Question 7

Question Type: **MultipleChoice**

Identify which of the following involves weak inequality.

Options:

A- Option A

$$a^2b^2 > c^2 + mx$$

B- Option B

$$a^2b^2 > c^2 + mx$$

C- Option C

$$a^2b^2 > c^2 + mx$$

D- Option D

$$a^2b^2 > c^2 + mx$$

Answer:

B

Question 8

Question Type: **MultipleChoice**

The random variableX has the followingprobability density function ("PDF"):

$$f_x(x) = \frac{1}{16}(5+3x) \; for \; 0 \le x \le 2$$

Calculate: P(x 1.5)

Options:

A- 0.164

B- 0.250

C- 0.320

D- 0.484

Answer:

C

Question 9

Question Type: **MultipleChoice**

Let A =

[-2, -1, 0, 1, 2]

$$\sum_{i \in A, i>2} \left(\prod_{j \in B, j>0} \left(i^2 + j^2 \right) \right)$$

Options:

A- 986

B- 1,224

C- 2,056

D- 3,286

Answer:

B

Question 10

Question Type: **MultipleChoice**

Consider a function f which has three variables, x1, x2 and x3.

Identify which of the following gives a correct definition of a partial derivative of the function f.

Options:

A- The derivative of f with respect to either one of its variables or two of its variables, the other two variables or the third variable being treated as constant, respectively.

B- The derivative of f with respect to one of its variables only, the other two variables being treated as constant.

C- The derivative of f with respect to two of its variables, the third variable being treated as constant.

D- The derivative of f with respect to all three of its variables.

Answer:

B