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NEW QUESTION: 1

Let a and b be two positive numbers and let m and n be two positive integers. Identify which of the following equalities is false.

A)

$$(a^n)^m = (a^m)^n$$

B)

$$\sqrt[n]{a} = a^{\sqrt{n}}$$

C)

$$(ab)^n = a^n b^n$$

D)

$$a^{-n} = \frac{1}{a^n}$$

A. Option C

B. Option A

C. Option B

D. Option D

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 2

Identify which of the following statements is not true about the probability density function of a continuous random variable.

A. Integrating it across its domain must produce an answer of 1.

- B. Differentiating it gives the cumulative distribution function.
- C. It could be greater than 1.
- D. It must be non-negative.

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 3

Multiply the following two matrices together.

$$\begin{pmatrix} 5 & 10 & 3 \\ 2 & 3 & 5 \\ 1 & 4 & 6 \end{pmatrix} \text{ and } \begin{pmatrix} 4 \\ 2 \\ 2 \end{pmatrix}$$

A)

$$\begin{pmatrix} 26 \\ 54 \\ 34 \end{pmatrix}$$

B)

$$\begin{pmatrix} 26 \\ 54 \\ 34 \end{pmatrix}$$

C)

$$(46 \ 24 \ 24)$$

D)

$$(26 \ 54 \ 34)$$

- A. Option C
- B. Option A
- C. Option B
- D. Option D

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 4

Let X be a continuous random variable with probability density function $f(x)$ that is defined over all real numbers.

Define $E[g(X)]$ where $g(x)$ is a continuous function.

A)

$$E[g(X)] = g(x) \int_{-\infty}^{\infty} f(x) dx$$

B)

$$E[g(X)] = \int_{-\infty}^{\infty} g(x) f(x) dx$$

C)

$$E[g(X)] = g\left(\int_{-\infty}^{\infty} x f(x) dx\right)$$

D)

$$E[g(X)] = \int_{-\infty}^{\infty} x f(g(x)) dx$$

- A. Option
- B. Option
- C. Option
- D. Option

Answer: [\(SHOW ANSWER\)](#)

NEW QUESTION: 5

Calculate the single extreme point of the function:

- A. (1,1)
- B. (0,4)
- C. (0,1)
- D. (0,2)

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 6

Simplify the expression:

$$5+10+15+20+\dots+5n$$

A)

$$\frac{5n^2}{4}$$

B)

$$\frac{5n(n+1)}{2}$$

C)

$$\frac{n(5n+1)}{2}$$

D)

$$\frac{5(1-5^n)}{-4}$$

- A. Option B
- B. Option D
- C. Option A
- D. Option C

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 7

Identify which of the following statements is correct.

If $0 < x < 1$ and $n > 1$, then x^n :

- A. can be greater than or less than x .
- B. is equal to x .
- C. is less than x
- D. is greater than x

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 8

A national newspaper wants to publish the results of a survey showing people's preferences for different types of sandwiches. Identify which of the following ways of publishing the survey results is likely to be the least useful to its readers.

- A. Table of data
- B. Box plot
- C. Bar chart
- D. Pie chart

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 9

Identify which of the following values is represented by:

$$\int_A^B f(x) dx$$

- A. The total increase in the value of $f(x)$ between A and B.
- B. The total area under the graph of $f(x)$ between A and B.
- C. The change in the gradient of $f(x)$ between A and B.
- D. The average gradient of $f(x)$ between A and B.

Answer: B ([LEAVE A REPLY](#))

NEW QUESTION: 10

Two real numbers, x and y , satisfy the following inequalities:

$$x > 0$$
$$xy \geq 0$$

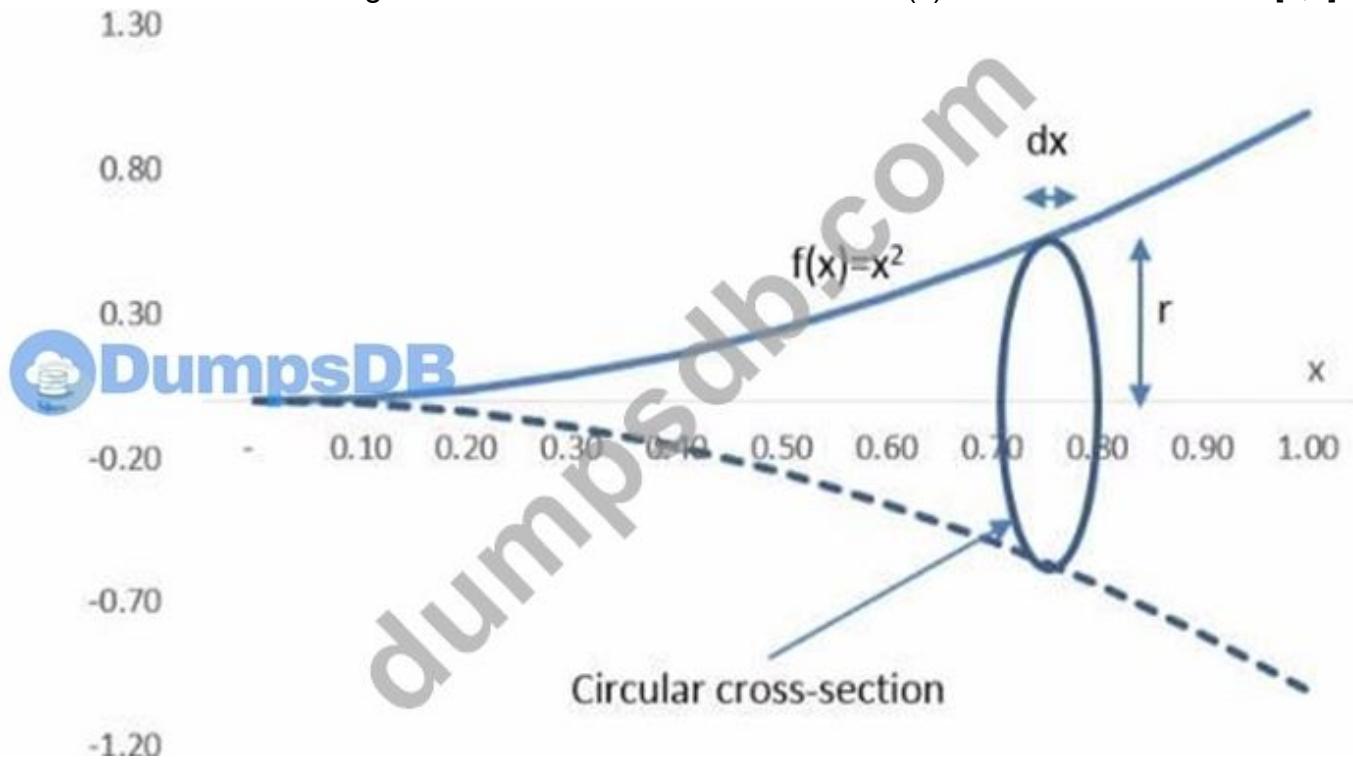
Determine which statement is true.

- A. y cannot be negative.
- B. y must be positive.
- C. y can be negative.
- D. y cannot be zero.

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 11

The volume of a cone can be determined by summing up the infinitesimal circular cross-sections of the cone across the length of the cone. Consider the function $f(x) = x^2$ for x contained in $[0, 1]$.



Now consider an infinitesimal circular cross-sectional element of width dx and radius $r = f(x)$. Determine the volume of the cone enclosed by the function $f(x)$ by considering the volume of each circular cross-sectional element. (Recall that the sum of infinitesimal elements can be represented as an integral. Recall also that the area of a

πr^2)

circle is

A)

$\frac{1}{3}$

B)

$\frac{1}{5}\pi$

C)

$\frac{1}{4}\pi$

D)

1

A. Option C

B. Option A

C. Option B

D. Option D

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 12

Identify which of the following statements is not true.

- A. The skewness is a measure of the asymmetry of a probability distribution about the mean.
- B. The variance is the square of the standard deviation.
- C. The standard deviation is a measure of how much variation from the mean exists in a probability distribution.
- D. The coefficient of skewness for a symmetric distribution is 1.

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 13

Consider the following definite integral:

$$\int_a^b \left| \frac{1}{x^2 - 1} \right| dx$$

where a and b are constants.

Determine for which combination of a and b the integral converges.

A)

$$a = -1.5, b = 0$$

B)

$$a = -0.5, b = 0$$

C)

$$a \rightarrow -\infty, b = 1$$

D)

$$a = 1, b \rightarrow \infty$$

- A. Option A
- B. Option C
- C. Option D
- D. Option B

Answer: C ([LEAVE A REPLY](#))

NEW QUESTION: 14

In an Olympic Race there are 100 competitors.

Calculate the number of ways of distributing the Gold, Silver and Bronze medals amongst all of the competitors.

A)

$$\frac{100!}{97!}$$

B)

$$\frac{100!}{3!}$$

C)

$$\frac{97!}{3!}$$

D)

97!

100!

A. Option D

B. Option C

C. Option B

D. Option A

Answer: D ([LEAVE A REPLY](#))

NEW QUESTION: 15

A snack bar does not give an itemised bill for drinks. In the past three visits, the total bills have been:

1) Three teas, two coffees and one lemonade cost £9.80

2) One tea four coffees and two lemonades cost £13.60

3) Two teas, two coffees and two lemonades cost £10

Calculate the price for a single coffee, given the prices have been the same for the three visits.

A. £2.40

B. £2.48

C. £1.20

D. £2.05

Answer: A ([LEAVE A REPLY](#))

NEW QUESTION: 16

Let X and Y be two independent random variables.

Identify which of the following statements is false.

A. $E[X-Y] = E[X] - E[Y]$

B. $E[XY] = E[X]E[Y]$

C. $E[2X] = 2E[X]$

D. $E[X^2] = E[X]E[X]$

Answer: D ([LEAVE A REPLY](#))

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NEW QUESTION: 17

Identify which of the following is not true about the population variance of a set of data.

- A. It can be calculated as
- B. It is represented by the symbol

$$\frac{\sum (x - \bar{x})^2}{n}$$

- C. It can be calculated as

$$\frac{\sum x^2}{n^2} - \left(\frac{\sum x}{n} \right)^2$$
$$\sigma^2$$

- D. Its positive square root gives the standard deviation

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 18

The particular solution of the second-order difference equation

$$y_{n+2} - 6y_{n+1} + 8y_n = 0 \quad n \geq 2$$

subject to the initial conditions $y_0 = 3$ and $y_1 = 2$ may be written in the form

$$y_n = A(2^n) + B(4^n) \quad n \geq 0.$$

Determine the values of (A, B).

- A. (-2, 3)
- B. (5, -2)
- C. (-3, 2)
- D. (-2, 5)

Answer: ([SHOW ANSWER](#))

NEW QUESTION: 19

Consider the function $f(x) = x^2 - 5x - 3$

The value of one of the roots of the above equation can be obtained by using the iteration formula

$$x_{n+1} = \frac{(x_n^2 - 3)}{5}, \text{ starting with } x_0 = 5.$$

Apply the iteration formula to determine the value of the root.

- A. 4.40
- B. 5.53
- C. 0.54
- D. 1.54

Answer: A ([LEAVE A REPLY](#))

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