Module 0 - Entry Exam

IFoA IFoA_CAA_M0

Version Demo

Total Demo Questions: 10

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QUESTION NO: 1

The probability density function f(x) for a random variable X is defined over the interval 0 to 1.

f(x) = 2(1-x).

Calculate the probability that X is greater than 0.5.

A. 0.25

B. 0.5

C. 0.75

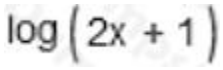
D. 1

ANSWER: A

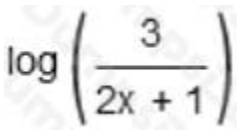
QUESTION NO: 2

Determine which of the options is equal to log(3) - 2log(x+1).

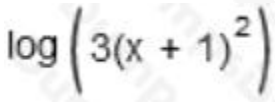
A)



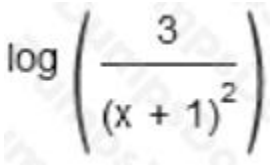
B)



C)



D)



A. Option A

B. Option B

C. Option C

D. Option D

ANSWER: D

QUESTION NO: 3

Three light bulbs are chosen at random from 15 bulbs of which 5 are known to be defective.

Calculate the probability that exactly one of the three is defective.

A)

$\frac{1}{3}$

B)

$\frac{15}{31}$

C)

$\frac{45}{91}$

D)

$\frac{33}{65}$

A. Option A

B. Option B

C. Option C

D. Option D

ANSWER: C

QUESTION NO: 4

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.

A. s + 5 < 6

B. s + 9 < 6

C. s - 6 > 2

D. s - 2 > 2

ANSWER: D

QUESTION NO: 5

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.

A. x - 50

B. x

C. max(x, 50)

D. max(x - 50, 0)

ANSWER: D

QUESTION NO: 6

Consider the function f(x) = x2-6x+20. This function has a stationary point at x = 3.

Determine the nature of this stationary point and how do we know this to be true.

A. It is a minimum stationary point because the second derivative of the function with respect to x takes the value 2, which is positive.

B. It is a maximum stationary point because the second derivative of the function with respect to x takes the value 2, which is positive.

C. It is a maximum stationary point because the value of the function at x = 3 is 11, which is positive.

D. It is a minimum stationary point because the value of the function at x = 3 is 11, which is positive.

ANSWER: A

QUESTION NO: 7

Determine which of the statements is true about the root(s) of the following equation:

$$x^2 + \sqrt{2}x - 4 = 0$$

A. There is only one real root which takes a positive value.

B. There is only one real root which takes a negative value.

C. There are two real roots, r1 and r2, where r1 is positive and:r1 = - 0.5 r2

D. There are two real roots, r1 and r2, where r1 is positive and:r1 = - 2 r2

ANSWER: C

QUESTION NO: 8

One of the two solutions to the equation is .

$$\frac{1}{|2 - 7x|} = 3$$

Determine the second solution.

$$\frac{5}{21}$$

A)

$$-\frac{1}{7}$$

B)

$$\frac{3}{14}$$

C)

$$\frac{1}{3}$$

D)

$\frac{5}{7}$

A. Option A

B. Option B

C. Option C

D. Option D

ANSWER: C

QUESTION NO: 9

A biased coin has the following probability distribution function:

P(heads) = 0.80

P(tails) = 0.20

The biased coin is tossed twice in succession.

Calculate the probability of tossing at least one tail.

A. 0.20

B. 0.36

C. 0.64

D. 0.80

ANSWER: B

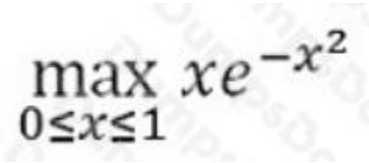
QUESTION NO: 10

Identify which of the following involves weak inequality.

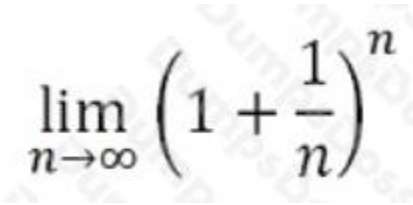
A)

$$(x+1)^n = \sum_k^n \binom{n}{k} x^k$$

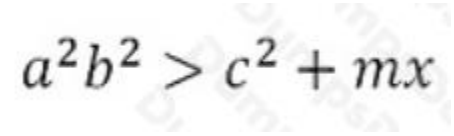
B)



C)



D)



A. Option A

B. Option B

C. Option C

D. Option D

ANSWER: B