

$$\begin{bmatrix} -5 & 2 \\ -5 & -14 \end{bmatrix}$$

Which of these statements is **False**, if the domain for all variables consists of all integers.

a. $\exists n \exists m (n + m = 4 \wedge n - m = 2)$

b. $\exists n \forall m (n < m^2)$

c. $\exists n \forall m (nm = m)$

d. $\exists m \forall n (n^2 < m)$

The correct answer is:

$\exists m \forall n (n^2 < m)$

If $A = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -2 \\ 1 & 5 \end{bmatrix}$ and $A + 2B + X = 0$ then the matrix X is

a.

$$\begin{bmatrix} -1 & -2 \\ -7 & -13 \end{bmatrix}$$

b.

$$\begin{bmatrix} 1 & 2 \\ 7 & 13 \end{bmatrix}$$

c.

$$\begin{bmatrix} 3 & -2 \\ 1 & 5 \end{bmatrix}$$

d.

$$\begin{bmatrix} -5 & 2 \\ -5 & -14 \end{bmatrix}$$

Matrix A is **4x4** matrix.

Matrix B is **4x3** matrix.

Which of the following matrix expressions is defined?

a. $2B - AB$

b. BA^2

c. $A + 2B$

d. $BA - 2A$

The correct answer is:

$2B - AB$

$(p \rightarrow q) \vee (p \rightarrow r)$ is logically equivalent to _____

The statement $(\neg P \leftrightarrow Q) \wedge \neg Q$ is true when?

- a. P: False Q: True
- b. P: True Q: False
- c. P: False Q: False
- d. P: True Q: True

The correct answer is:

P: True Q: False

The sum of first thirty terms of the following sequence 0, 3, 6, 9, 12, 15 is

- a. 1392
- b. 1395
- c. 1302
- d. 1305

The correct answer is:

1305

If $A = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -2 \\ 1 & 5 \end{bmatrix}$ and $A + 2B + X = 0$ then the matrix X is

The correct answer is:

3, 4

Let the players who play cricket be 8, the ones who play football 20, those who play only cricket are 4, then the number of players who play only football are _____, assuming there is a total of 24 players.

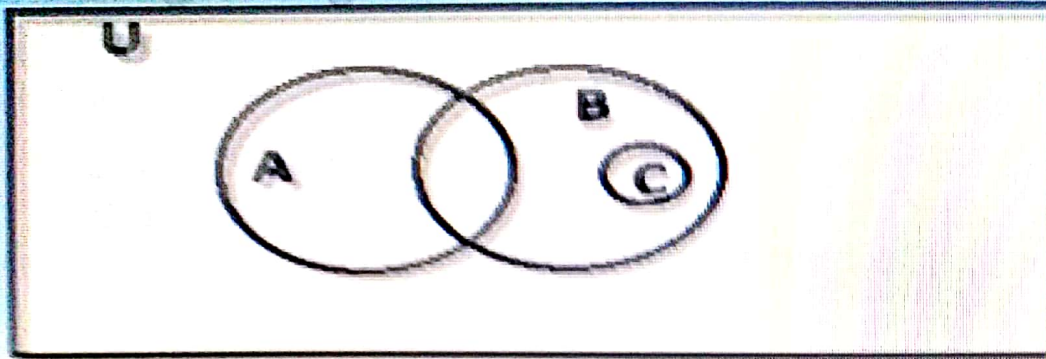
- a. 16
- b. 10
- c. 8
- d. 4

The correct answer is:

16

The next term in the following sequence 2, 4, 16, 38, 70, is

In the given figure the if $|A|=30$, $|C|=10$, $|A \cup B \cup C|=50$ and $|A \cap B|=10$ then $|B|=?$



- a. 20
- b. 10
- c. 35
- d. 30

POWERUNIT

The correct answer is:
30

Which of the following function $f: \mathbb{Z} \times \mathbb{Z} \rightarrow \mathbb{Z}$ is not onto?

a. $f(a, b) = |a + b|$

b. $f(a, b) = b$

c. $f(a, b) = a - b$

d. $f(a, b) = a$

The correct answer is:

$f(a, b) = |a + b|$

The next term in the following sequence 2, 4, 16, 38, 70, is

- a. 112
- b. 68
- c. 72
- d. 42



The correct answer is:

112

$(p \leftrightarrow q) \oplus (p \leftrightarrow \neg q)$ is _____

4

OUT

$(p \leftrightarrow q) \oplus (p \leftrightarrow \neg q)$ is _____

- a. Contingency
- b. Induction
- c. Contradiction
- d. Tautology

The correct answer is:
Tautology

5

What is the negation of the statement $A \rightarrow (B \vee C)$?

$(p \rightarrow q) \vee (p \rightarrow r)$ is logically equivalent to _____

a. $p \vee (q \wedge r)$

b. $p \wedge (q \vee r)$

c. $p \rightarrow (q \wedge r)$

d. $p \rightarrow (q \vee r)$

The correct answer is:

$p \rightarrow (q \vee r)$

The correct answer is:

12, 16

Two sets A and B contains a and b elements respectively. If power set of A contains 8 more elements than that of B, value of 'b' and 'a' are _____

a. 6, 7

b. 3, 4

c. 4, 5

d. 2, 3

The correct answer is:

3, 4

POWERUNIT



If A has 4 elements B has 12 elements then the minimum and maximum number of elements in $A \cup B$ are _____

- a. 12, 16
- b. 8, 16
- c. 8, 12
- d. 4, 8

The correct answer is:
12, 16

If f is a function defined from \mathbb{R} to \mathbb{R} , is given by $f(x) = 3x - 5$ then $f^{-1}(x)$ is given by

a. $(x+5)/3$

b. $(x+3)/5$

c. does not exist since it is not a bijection

d. $1/(3x-5)$

The correct answer is:

$(x+5)/3$

POWERUNIT

10 - less sets than the minimum and maximum number of elements

What is the type of the following function:

$$f(x) = x^2 + 5$$

where the domain is \mathbb{N} and the codomain is \mathbb{N}

- a. One to one (Injective)
- b. Onto (Surjective)
- c. One to one correspondence (Bijection)
- d. None of the choices is correct
- e. f is not a function

Question 4

Not yet answered

Marked out of 2.00

Flag question

Which of the following propositions is tautology

a. $p \wedge (\neg p \vee q) \rightarrow \neg p$

b. $\neg p \wedge (p \vee q) \rightarrow p$

c. $\neg p \wedge (p \vee q) \rightarrow \neg p$

d. $\neg p \wedge (\neg p \vee \neg q) \rightarrow p$

e. None of the choices is correct

Question 5

Not yet answered

Marked out of

Assume that the total number of students in the university is 2000. Also, assume that the total number of students taking calculus is 1000 and the total number of students taking physics is 700. Assume that the total number of students taking both calculus and physics is 400. What is the total number of students not taking calculus and not taking physics.

What is the negation of the statement $A \rightarrow (B \vee C)$?

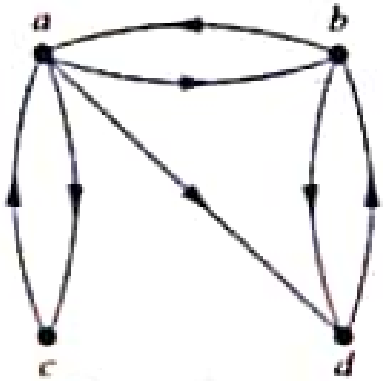
- a. $A \wedge \neg B \wedge \neg C$
- b. $\neg A \wedge B \wedge C$
- c. $A \rightarrow B \rightarrow C$
- d. $\neg A \wedge B \vee C$

POWERUNIT

The correct answer is:

$$A \wedge \neg B \wedge \neg C$$

Assume that the following graph represents a relation. Which of the following is true about the relation?



- a. Transitive
- b. None of the choices is correct
- c. Reflexive and Symmetric
- d. Reflexive, and Transitive
- e. Antisymmetric

e. None of the choices is correct

Question 5

Not yet
answered

Marked out of
2.00

Flag
question

Assume that the total number of students in the university is 2000. Also, assume that the total number of students taking calculus is 1000 and the total number of students taking physics is 700. Assume that the total number of students taking both calculus and physics is 400. What is the total number of students not taking calculus and not taking physics.

a. 500

b. 100

c. None of the choices is correct

d. 200

e. 400

Next page

Question 19

Not yet answered

Marked out of 2.00

Flag question

If a and b are relatively prime then

$$\text{GCD}(a,b) =$$

a. a

b. b

c. 1

d. $a \times b$

e. None of the choices is correct

Question 20

Not yet

Assume that the following graph represents a relation. Which of the following is true about the relation?

Question 11

Not yet answered

Marked out of 2.00

Flag question

$-30 \text{ div } 8 =$

a. -6

b. -5

c. -4

d. -3

e. None of the choices is correct

Question 12

Not yet answered

What is the Postfix notation of the following expression:

$$3 + 2 * (5 - 3) / 5$$

Question 17

Not yet answered

Marked out of 2.00

Flag question

How many edges does the complete graph K_{11} contain?

- a. 10
- b. 20
- c. 35
- d. 50
- e. None of the choices is correct

Question 18

Not yet answered

Marked out of 2.00

Flag question

Given the following sequence

$$a_0 = 6$$

$$a_1 = 9$$

$$a_2 = 12$$

$$a_3 = 15$$

Find a_{100}

- a. 302
- b. None of the choices is correct

Question 16

Not yet answered

Marked out of 2.00

Flag question

Which of the following statements is correct, where the domain consists of positive integer numbers

- a. $\forall y \exists x (xy = 1)$
- b. All the statements are incorrect
- c. $\forall x \forall y (x > y \rightarrow x^2 > y^2)$
- d. $\exists x \forall y (xy = x)$
- e. $\forall x \exists y (x + y = 1)$

Question 17

Not yet

How many edges does the complete graph K_{11} contain?

Question 9

Not yet
answered

Marked out of
2.00

Flag
question

What is the converse of the following proposition

if $x \neq y$ then $a = b$

- a. None of the choices is correct
- b. if $a = b$ then $x \neq y$
- c. if $a \neq b$ then $x = y$
- d. if $x \neq y$ then $a \neq b$
- e. if $x = y$ then $a \neq b$

Question 10

Not yet
answered

Based on this graph

2

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

a.
$$\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

b.
$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

c. None of the choices is correct

d.
$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

e.
$$\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Question 7

Not yet
answeredMarked out of
2.00Flag
question

Which matrix represents the transitive closure of the relation represented by the following matrix

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

a. $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$

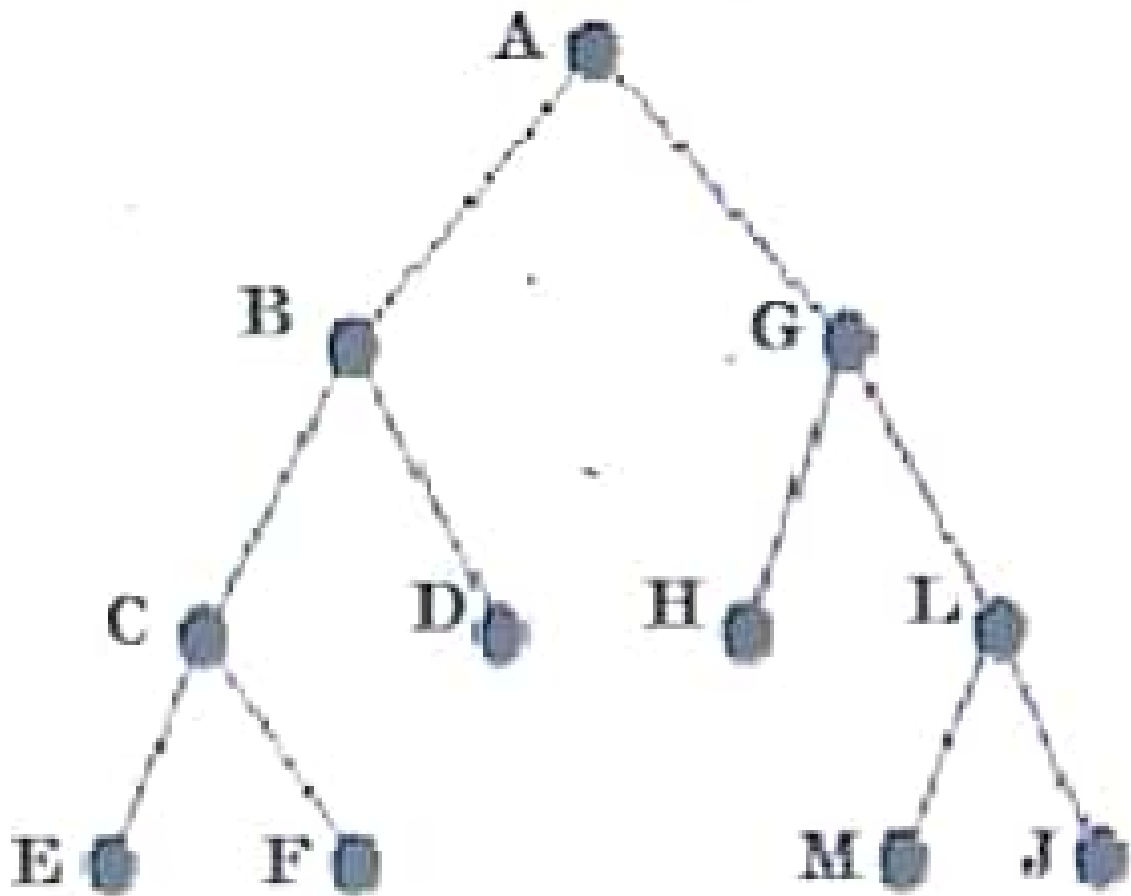
b. $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

c. None of the choices is correct

d. $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

e. $\begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$

Based on this tree



Which of the following is correct

- a) The node H is an internal node
- b) The nodes C and D are siblings
- c) The level of nodes is 2

- a. a,c only
- b. a, b, c
- c. a,b only
- d. a only
- e. b,c only

$$[2.3 + [-3.5 - 2.2]] =$$

- a. None of the choices is correct
- b. -5
- c. -2
- d. -3
- e. -4

POWERUNIT

What is the type of the following function:

$$f(x) = x^2 + 5$$

where the domain is \mathbb{N} and the codomain is \mathbb{N}

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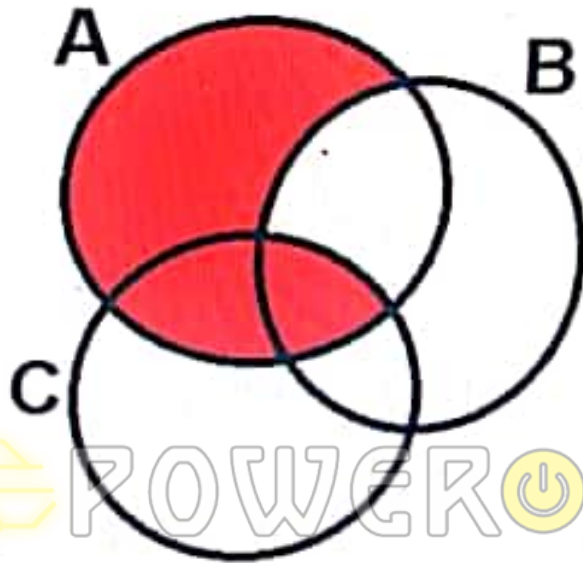
Question 3

Not yet answered

Marked out of 2.00

Flag question

Which of the sets is described by the following Venn diagram



- a. $A - (B - C)$
- b. $A - (C - B)$
- c. $(A - B) - C$
- d. $(A - C) - B$
- e. None of the choices is correct.

Let A be a 3×4 matrix, B be a 4×5 matrix, and C be a 4×4 matrix. Determine one of the following products is defined

- a. $(AB)C$
- b. $(BA)C$
- c. $(CB)A$
- d. None of the choices is correct
- e. $(AC)B$



What is the converse of the following proposition

if $x=y$ then $a=b$

- a. None of the choices is correct
- b. if $a=b$ then $x=y$
- c. if $a=b$ then $x=y$

Question 7

Not yet answered

Marked out of 2.00

Flag question

Which matrix represents the transitive closure of the relation represented by the matrix

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

a $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$

b $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

c. none of the choices is correct

d $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

e $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

Question 7

Not yet answered

Marked out of 2.00

Flag question

Which matrix represents the transitive closure of the relation represented by the matrix

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

a $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$

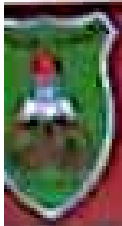
b $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

c. none of the choices is correct

d $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

e $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$





- b. a,c only
- c. a,b only
- d. a,b,c
- e. a only

Question 15

Not yet answered

Marked out of 2.00

Flag question

$$\begin{bmatrix} 3 & 1 & 2 \\ 2 & 3 & 4 \end{bmatrix} \times \begin{bmatrix} 1 & 3 \\ 4 & 6 \\ 3 & 2 \end{bmatrix} = \begin{bmatrix} x1 & x2 \\ x3 & x4 \end{bmatrix}$$

The value of x3 =

Note: Write only a number in the space provided below

Answer:

The summation $\sum_{j=0}^5 j(j+1)$ is equivalent to

Select one:

a. $\sum_{j=-1}^4 j(j+1)$

b. $\sum_{j=-1}^4 j(j-1)$

c. $\sum_{j=-1}^6 j(j-1)$

d. None of the choices is correct

e. $\sum_{j=0}^5 j(j-1)$

Assume that the following is the adjacency matrix of a graph.

$$\begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 \end{bmatrix}$$

Which of the following is true about the graph?

a) The total number of nodes in the graph is 5

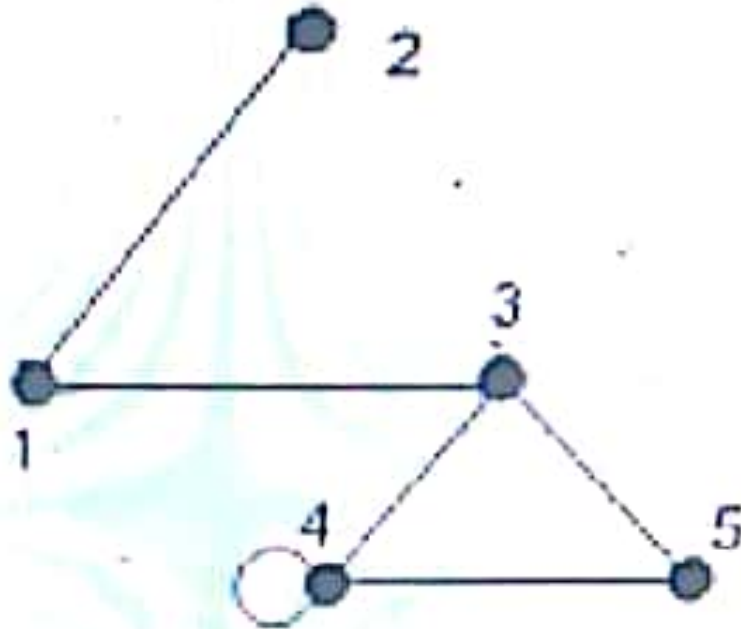
Question 10

Not yet answered

Marked out of 2.00

Flag question

Based on this graph



Which of the following is true

- a) The degree of node 3 is 3
- b) 3,4,4 is a simple path of length 2
- c) The total number of edges is 5

- a. a only
- b. a,b only
- c. a,c only
- d. b,c only
- e. a,b,c only

In a full 4-ary tree, if the total number of leaves is 13, then the total number of edges =

- a. 8
- b. 6
- c. 12
- d. 10
- e. None of the choices is correct

Which of the following relations is a partial order relation defined on $A = \{1,2,3\}$

- a. $R = \{(1,1), (2,1), (2,2), (3,1), (3,3)\}$
- b. None of the choices is correct
- c. $R = \{(1,1), (2,1), (2,2), (2,3), (3,1)\}$
- d. $R = \{(1,1), (2,2), (2,3), (3,2), (3,3)\}$
- e. $R = \{(1,1), (1,2), (2,2), (2,3), (3,3)\}$

Question 22

Not yet
answered

Marked out of
2.00

Flag
question

In the following sequence

$$a_n = 2a_{n-1} + 3a_{n-2}$$

where

$$a_0 = 3 \text{ and } a_1 = 1$$

Find a_4

- a. 61
- b. 85
- c. 82
- d. 83
- e. None of the choices is correct

Question 23

Not yet

Let

$$f(x) = 2x$$

Question 21

Not yet answered

Marked out of 2.00

Flag question

$$\sum_{i=1}^3 \sum_{j=2}^5 2i + j =$$

- a. 102
- b. 114
- c. 78
- d. None of the choices is correct

e. 96

POWERUNIT

Question 22

Not yet answered

In the following sequence

$$a_n = 2a_{n-1} + 3a_{n-2}$$

Question 11

Not yet answered

Marked out of 2.00

Flag question

$$-30 \div 8 =$$

- a. -6
- b. -5
- c. -4
- d. -3
- e. None of the choices is correct

Question 12

Not yet answered

Marked out of 2.00

Flag question

What is the postfix notation of the following expression:

$$3 + 2 * (5 - 3) / 5$$

- a. None of the choices is correct
- b. $3 2 5 + * 3 5 / -$
- c. $3 2 5 3 - 5 / * +$
- d. $3 2 + 5 * 3 5 / -$
- e. $3 2 5 * 3 5 - / + *$

Question 14

Not yet answered

Marked out of 2.00

Flag question

Assume that the following is the adjacency matrix of a graph.

$$\begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 \end{bmatrix}$$

Which of the following is true about the graph?

- a) The total number of nodes in the graph is 5
- b) The graph is undirected
- c) The total number of edges in the graph is 14

- a, b, c only
- b, a, c only
- c, a, b only
- d, a, b, c
- e, a only

d. 83

e. None of the choices is correct

Time left 0:09:37

Question 23

Not yet answered

Marked out of 2.00

Flag question

Let

$$f(x) = 2x$$

$$g(x) = 3x-1$$

$$h(x) = x+2$$

Then, $((g \circ f) \circ h)(x) =$

a. $6x+5$

b. $6x+11$

c. $6x+7$

d. $6x+10$

e. None of the choices is correct

Question 24

Not yet

In a full 4-ary tree, if the total number of leaves is 13, then the total number of edges =