

Question 1

Not answered

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Flag question

Find

$$(\neg 1010111 \wedge 1100111) \oplus 1110111$$

Answer:

Question 2

Not answered

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Given two propositions:

p = "I went to Paris."

q = "I visit Eiffel Tower"

Which sentence on the left corresponds to the expression on the right?

I went to Paris, but I did not visit Eiffel Tower.

Choose...



Whenever I go to Paris, I visit Eiffel Tower.

Choose...



I visit Eiffel Tower only if I go to Paris.

Choose...



I cannot visit Eiffel Tower if I do not go to Paris.

Choose...



Question 3

Not answered

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Which propositions are tautology?

$$(p \wedge q) \rightarrow p$$

Choose...



$$(p \vee r) \wedge (\neg p \vee q) \rightarrow (q \vee r)$$

Choose...



$$(p \vee q) \rightarrow (p \rightarrow q)$$

Choose...



Question 4

Not answered

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Which proposition is logically equivalent to

$$(p \rightarrow q) \vee [\neg p \rightarrow (q \vee r)] ?$$

Select one:

- ☐ a. $q \rightarrow r$
- ☐ b. $p \vee q \vee r$
- ☐ c. $r \vee q$
- ☐ d. T
- ☐ e. $p \vee q$

Question 5

Not answered

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Which statements are correct?

$\forall x(P(x) \vee Q(x))$ and $\forall x P(x) \vee \forall x Q(x)$ have the same truth values

Choose... ▼

$\forall x(P(x) \wedge Q(x))$ and $\forall x P(x) \wedge \forall x Q(x)$ have the same truth values

Choose... ▼

$\forall x(P(x) \rightarrow Q(x))$ and $\forall x P(x) \rightarrow \forall x Q(x)$ have the same truth values

Choose... ▼

Question 6

Not answered

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Let $E(x, y) = \text{"x emails y"}$.

Translate the sentence into logical expression, domain is all people.

"Some one received an email from another person"

Select one:

- ☐ a. $\exists x \exists y ((x \neq y) \wedge E(x, y))$
- ☐ b. $\exists x \exists y E(x, y)$
- ☐ c. $\exists x \exists y ((x \neq y) \vee E(x, y))$
- ☐ d. $\exists x \exists y ((x \neq y) \rightarrow E(x, y))$

Question 7

Not answered

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Recall two fallacies:

(I) $[(p \rightarrow q) \wedge q] \rightarrow p$

(II) $[(p \rightarrow q) \wedge \neg p] \rightarrow \neg q$

Given the statement:

“In a right triangle, the sum of three angles is 180^0 . Therefore, the sum of three angles of an acute triangle is not 180^0 .”

Choose correct statement:

Select one:

- ☐ a. This is a valid argument
- ☐ b. This is a fallacy of type (I)
- ☐ c. This is a fallacy of type (II)

Question 8

Not answered

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Find the negation of

$$\forall x \forall y (\exists z T(x, y, z) \wedge Q(x, y))$$

Select one:

- ☐ a. $\exists x \exists y (\forall z \neg T(x, y, z) \vee Q(x, y))$.
- ☐ b. $\exists x \exists y (\forall z \neg T(x, y, z) \vee \neg Q(x, y))$.
- ☐ c. $\forall x \exists y (\forall z \neg T(x, y, z) \wedge \neg Q(x, y))$.
- ☐ d. $\forall x \exists y (\forall z T(x, y, z) \vee Q(x, y))$.

Question 9

Not answered

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Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$. Represent the subset $A = \{2, 5, 7, 8, 9, 10\}$ by a bit string where the i -th bit is 1 if and only if i is in A .

Answer:

Question 10

Not answered

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Let $A=\{0, a\}$, $B=\{0, b\}$. Determine $B \times A$.

Select one:

- ☐ a. $\{(0,0), (a, b)\}$
- ☐ b. $\{(0,0), (0, b), (a, 0), (a, b)\}$
- ☐ c. $\{(0,0), (b, a), (0, a), (b, 0)\}$
- ☐ d. $\{(0,0), (0, b), (a, 0), (a, b), (b, a), (0, a), (b, 0)\}$

Question 11

Not answered

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Which rules are functions from \mathbb{R} to \mathbb{R} ?

$$f(x) = \sqrt{x}$$

Choose... ▼

$$f(x) = 1/x$$

Choose... ▼

$$f(x) = \ln(x)$$

Choose... ▼

$$f(x) = 2x^2 + 1$$

Choose... ▼

Question 12

Not answered

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Let $f(X) = 5X + 4$, $g(X) = 4X + 3$. Suppose that $f \circ g(X) = aX + b$. Find $a + b$.

Answer:

Question 13

Not answered

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Compute $\lfloor \frac{3}{2} - \lceil 3 + \frac{5}{4} \rceil \rfloor$

Answer:

Question 14

Not answered

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Let $f: \mathbb{Z} \times \mathbb{Z} \rightarrow \mathbb{Z}$, $f(m, n) = n+1$. Choose correct answer:

Select one:

- ☐ a. f is one-to-one but not onto
- ☐ b. f is onto but not one-to-one
- ☐ c. $f(x)$ is neither one-to-one nor onto
- ☐ d. f is a bijection

Question 15

Not answered

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Compute

$$\sum_{i=1}^6 (2.3^i + 3.2^i).$$

Answer:























