Started on	Tuesday, 6 July 2021, 9:28 PM
State	Finished
Completed on	Tuesday, 6 July 2021, 9:32 PM
Time taken	4 mins 25 secs
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

8220629

Determine whether these are valid arguments.

"If n is real number such that $n>0$, then $n^2>0$. Suppose that $n^2>0$. Then $n>0$."

Select one:

A.
It's not valid. ✔

B.
It's valid.

Question **2**

Correct

Mark 1.00 out of 1.00

8220629

Which rule of inference is used in each of these arguments, “If it's holiday, then the university will be closed. The university is not closed today. Thus, it's not holiday today.”

Select one:

A.
Disjunctive syllogism

B.
Simplification

C.
Modus tollens ✔

D.
Modus ponens

Question **3**

Correct

Mark 1.00 out of 1.00

8220629

What is the name of the rule of inference for the used in the following quantified statement: “If $Q(a)$ is true for any arbitrary a in the domain, then $\forall a, Q(a)$.”

Select one:

A.
Universal instantiation

B.
Existential instantiation

C.
Universal generalization ✔

D.
Existential generalization

Question **4**

Correct

Mark 1.00 out of 1.00

8220629

A proof covering all the possible cases, such type of proofs are known as

Select one:

A.
Vacuous proofs

B.
Exhaustive proof ✔

C.
Direct proofs

D.
Contrapositive proofs

Question **5**

Correct

Mark 1.00 out of 1.00

8220629

To prove the statement: 'There exists a real number r such that r is irrational and r^2 is rational', we show that there is $r=\sqrt{2}$ satisfying that r is irrational and $r^2=2$ is rational. Which proof has been used?

Select one:

A.
Indirect Proof

B.
Proof by contradiction

C.
Direct Proof

D.
Existence Proof ✔

Question **6**

Correct

Mark 1.00 out of 1.00

8220629

Determine wether these are valid arguments.

"If $x^2 \neq 0$ where x is a real number, then $x \neq 0$. Let a be a real number with $a^2 \neq 0$, then $a \neq 0$. "

Select one:

A.
It's not valid.

B.
It's valid. ✔

Question **7**

Correct

Mark 1.00 out of 1.00

8220629

Given the following statements and the conclusion:

i) If the ice cream on the table is vanilla-flavored, then I will eat it.

ii) I ate the ice cream on the table.

iii) Conclusion: The ice cream is vanilla-flavored.

The conclusion is ....., using the .....

Select one:

A.
a fallacy; fallacy of denying the hypothesis

B.
logical; rule of inference modus ponens

C.
logical; rule of inference modus tollens

D.
a fallacy; fallacy of affirming the conclusion ✔

Question **8**

Correct

Mark 1.00 out of 1.00

8220629

To show that "The product of two rational numbers is rational", we assume that a and b are rational, which means $a = p/q$, $b = m/n$ where $p,q,m,n \in \mathbb{Z}$ and $q,n \neq 0$. The product of a and b is then $ab = p/q.m/n = pm/qn$ and hence it is rational. Which proof has been used?

Select one:

A.
Trivial proof

B.
Direct proof ✔

C.
Proof by contradiction

D.
Indirect proof

Question **9**

Correct

Mark 1.00 out of 1.00

8220629

"Peter goes out with friends or it is not sunny" and "It is sunny or Paul is playing soccer" imply that

Select one:

A.
Peter go out with friends and Paul is playing soccer.

B.
Paul is playing soccer.

C.
Peter go out with friends or Paul is playing soccer. ✔

D.
Peter go out with friends.

Question **10**

Correct

Mark 1.00 out of 1.00

8220629

proof that $P \rightarrow Q$ is true based on the fact that Q is true, such proofs are known as

Select one:

A.
Vacuous proofs

B.
Direct proofs

C.
Trivial proofs ✔

D.
Contrapositive proofs

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