Methods of Proof I

- **วิชชาภัทร จินดานาถ** previously submitted answers to this quiz/test on 23-Oct-2023 @ 09:29:08 and obtained **5** correct answers out of **5** .
- This test/quiz can be taken many times.
- Correct answers will NOT be revealed after submission.

undefined

1 Consider the following statement:

"The sum of two even integers is even." From previous attempt

Which of the following is **the easiest method** for proving the given statement?

By contradiction: Assume that the sum of two even integers is odd.

By direct proof: Let m and n be even integers.

By induction: Prove that the sum of two even integers is even for the base case.

By counterexample: Provide an example where the sum of two even integers is not even.

---

2 Consider the following proof:

Proof that "1 = 2" From previous attempt

Steps		Reason

(1)	$a = b$	Given
(2)	$a^2 = ab$	Multiply both sides of (1) by a
(3)	$a^2 - b^2 = ab - b^2$	Subtract b^2 from both sides of (2)
(4)	$(a - b)(a + b) = b(a - b)$	Factor both sides of (3)
(5)	$a + b = b$	Divide both sides of (4) by $a - b$
(6)	$2b = b$	Replace a by b in (5) because a=b and simplify
(7)	$2 = 1$	Divide both sides of (6) by b

What is **the step** that makes this proof **WRONG**?

(1)

(3)

(5)

None of the above

3

Consider the following proof:

From previous attempt

Prove that “If n is an odd integer, then n^2 is odd.”

By using **DIRECT Proof**:

Steps		**Reason**
(1)	$n = 2k + 1$	Assume that n is odd, where k is an integer.
(2)	$n^2 = (2k + 1)^2$	Square both sides of (1)
(3)	$n^2 = 2(2k^2 + 2k) + 1$	From the equation (2)
(4)	$n^2 = 2K + 1$	Group $(2k^2 + 2k)$ into K which implies that K **is an integer** since k is an integer

(5)	n^2 is odd.	From (4), **Q.E.D.**

What is **the step** that makes this proof **WRONG**?

(1)

(2)

(4)

None of the above.

---

4 Consider the following statement:

"If m and n are integers and mn is even, then m is even or n is even."

From previous attempt

Which of the following is **the easiest method** for proving the given statement?

Direct Proof

Contraposition Proof

Vacuous Proof

None of the above

---

5 In order to prove the statement in the previous question, which of the following assumptions **should be used** for the first step of the proof?

From previous attempt

Assume that "m is odd and n is odd."

Assume that "m is even or n is even."

Assume that "mn is even."

Assume that "mn is odd."

Submit

Previous (?q=onlinecourse/theatre/27033/jqcE6x5U9jeF)

Next (?q=onlinecourse/theatre/27034/Ur3qzKAHWeeJyc)

Version 1.15.23.2

Privacy Policy (https://lic.chula.ac.th/?page_id=7606) updated on 06 Jan 2023
Cookie Policy (https://www.mycourseville.com/cookiepolicy.html) updated on 21 May 2022

LMS and Online Course Platform within mycourseville.com are operated by Learning Innovation Center, Chulalongkorn University (http://www.lic.chula.ac.th/)