

Name: _____

Date: _____

Quiz name: Discrete Math Feb 10 (basic proofs)

1. If you're trying to prove P implies Q , which of these is a valid proof by contradiction strategy?

- (A) Assume P and deduce (not Q).
- (B) Assume (not P) and deduce Q .
- (C) Assume (P and not Q) and deduce a contradiction.
- (D) Assume (Q implies P) and deduce a contradiction.

Suppose Aloysius is asked to prove that "The product of any nonzero rational with any irrational is irrational."

2. His proof begins this way: "Proof by contradiction: assume that the product of any nonzero rational with any irrational is rational."

- (A) It's valid.
- (B) It's not valid because it starts with a false assumption.
- (C) It's not valid because it starts with the wrong negation.

3. Suppose Siobhán is trying to prove that "A multiple of 3 plus a multiple of 5 must be even." She starts her proof like this: "Let $x=3k$ be a multiple of 3 and let $y=5k$ be a multiple of 5."

- (A) It's valid.
- (B) It's not valid because the assumptions are not sufficiently general.
- (C) It's not valid because this requires a proof by contradiction.