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A direct proof is based on the fact that:

A. $p \equiv \neg p \rightarrow (q \wedge \neg q)$
B. $p \rightarrow q \equiv \neg p \vee q$
C. $p \rightarrow q \equiv \neg q \rightarrow \neg p$
D. $(p \vee q) \rightarrow r \equiv (p \rightarrow r) \wedge (q \rightarrow r)$
E. none of the above

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A proof by contraposition is based on the fact that:

A. $p \equiv \neg p \rightarrow (q \wedge \neg q)$
B. $p \rightarrow q \equiv \neg p \vee q$
C. $p \rightarrow q \equiv \neg q \rightarrow \neg p$
D. $(p \vee q) \rightarrow r \equiv (p \rightarrow r) \wedge (q \rightarrow r)$
E. none of the above

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A proof by contradiction is based on the fact that:

A. $p \equiv \neg p \rightarrow (q \wedge \neg q)$
B. $p \rightarrow q \equiv \neg p \vee q$
C. $p \rightarrow q \equiv \neg q \rightarrow \neg p$
D. $(p \vee q) \rightarrow r \equiv (p \rightarrow r) \wedge (q \rightarrow r)$
E. none of the above

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A proof by cases is based on the fact that:

A. $p \equiv \neg p \to (q \wedge \neg q)$
B. $p \to q \equiv \neg p \vee q$
C. $p \to q \equiv \neg q \to \neg p$
D. $(p \vee q) \to r \equiv (p \to r) \wedge (q \to r)$
E. none of the above

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An existence proof is based on the fact that:

A. $p \equiv \neg p \to (q \wedge \neg q)$
B. $p \to q \equiv \neg p \vee q$
C. $p \to q \equiv \neg q \to \neg p$
D. $(p \vee q) \to r \equiv (p \to r) \wedge (q \to r)$
E. none of the above

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Consider the following proposition:

PROPOSITION: Let n be an integer.
If n is even then n^2 is even.

A direct proof would start with:

A. Assume n is even.
B. Assume n is not even.
C. Assume n^2 is not even.
D. Assume n is even and n^2 is not even.
E. None of the above

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PROPOSITION: Let n be an integer.
If n is even then n^2 is even.

A proof by contraposition would start with:

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Consider the following proposition:

> ***PROPOSITION***: Let n be an integer.
> If n is even then n^2 is even.

A proof by contradiction would start with:

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B. Assume n is not even.
C. Assume n^2 is not even.
D. Assume n is even and n^2 is not even.
E. None of the above

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Consider the following proposition:

> ***PROPOSITION***: Let n be an integer.
> If n is even then n^2 is even.

A proof by cases would start with:

A. Assume n is even.
B. Assume n is not even.
C. Assume n^2 is not even.
D. Assume n is even and n^2 is not even.
E. None of the above

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The only way to prove a proposition of the form $\exists x, P(x)$ is to find an element u such that P(u) is true.

A. True
B. False