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Quiz

Q1.

p	q	p∨q	p∧q	p∨q → p∧q
0	0	0	0	1
0	1	1	0	0
1	0	1	0	0
1	1	1	1	1

Q2 i) $Q(n) \rightarrow n+1 > 2n$

1) $Q(-1)$, putting (-1) in place of n

$-1+1 > (-1) \cdot 2$

$0 > -2$

$\therefore Q(-1)$ evaluates to TRUE

2 $\forall Q(x)$:

Testing with $n = 3$

$\not\forall \quad 3+1 > 2 \cdot 3$

$4 \not> 6$

$\therefore \forall Q(n)$ evaluates to FALSE

Q3 Negation of $\forall x((C(x) \rightarrow (D(x) \wedge E(x))$

$\neg \forall x((C(x) \rightarrow (D(x) \wedge E(x)))$

$\equiv \exists x \neg (C(x) \rightarrow (D(x) \wedge E(x)))$

$\equiv \exists x (C(x) \wedge \neg (D(x) \wedge E(x)))$

$\equiv \exists x (C(x) \wedge (\neg D(x) \vee \neg E(x)))$

Final Negation with only 1 negation sign:

$\exists x (C(x) \wedge \neg (D(x) \wedge E(x)))$