

Name.....

Student ID.....

Show the details of your work. Unsupported answers receive no credit.

1. Prove that if $[\neg(s \wedge r) \vee s \vee p] \rightarrow (s \wedge t)$, then t .

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2. Prove that if $a \vee b \vee c$, $\sim(d \wedge e) \rightarrow \sim(f \vee a)$, and $(c \rightarrow a) \wedge (\sim b \vee f)$, then d .

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3. Prove that if $\sim(p \rightarrow q)$, $(p \wedge r) \rightarrow (s \rightarrow q)$, and $(\sim r \rightarrow q) \vee (p \rightarrow s)$, then $r \leftrightarrow \sim s$.

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4. Prove that if x is odd then 4 divides $x^2 - 1$

5. Prove that $[(s \rightarrow t) \vee \sim r] \leftrightarrow [(r \wedge s) \rightarrow (t \vee \sim r)]$.