Mini-Homework 4

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Claim: $P \wedge Q \vdash \neg(P \rightarrow \neg Q)$ is valid.

Proof:
Let $P \wedge Q$ be true.
Since $P \wedge Q$, P and Q ($\wedge$-elimination)
— Assume $P \rightarrow \neg Q$ is true. (Will show a contradiction)
— Since $P \rightarrow \neg Q$ and P, $\neg Q$ ($\rightarrow$-elimination)
Assuming $P \rightarrow \neg Q$ we proved $\neg Q$, and we proved Q, which contradict, and therefore $\neg(P \rightarrow \neg Q)$ (Conrad.) $\square$