

6. Applying de Morgan's law to the second statement,

$$\neg((P \wedge Q) \wedge \neg R) = \neg(P \wedge Q) \vee R$$

For the two original statements to be equivalent, then it would mean

$$\neg(P \wedge Q) \stackrel{?}{=} (P \implies Q)$$

...which is certainly false. These statements are not equivalent.