



2- P: Being divisible by 3 is a necessary condition for this number to be divisible by 9.

Using the contrapositive

1. If a number is not divisible by 9, then its not divisible by 3.

2. If a number is divisible by 9, then its divisible by 3.

5- Yes, the system specifications are consistent.

1. When the system software is being upgraded, user cannot access the file system.

2. If users can access the file system, then they can save new files.

3. If user cannot save new files, then the system software is not being upgraded

8-(i) This argument is not valid. The statement "If x is a positive real number, then x^2 is a positive real number" does not imply the conclusion that if a^2 is positive then a is a positive real number.
Counter examples include: $a = -2$

(ii) The argument is valid. The contrapositive of the given statement is "If $x=0$ then $x^2=0$ ". The contrapositive is logically equivalent to the original statement so the argument is valid.

(iii) The argument is not valid. The conclusion does not logically follow from the given premises. The fact that someone in New Jersey has never seen the ocean does not imply that someone who lives within 50 miles of the ocean has never seen it. There, could be people within that distance who have seen the ocean.