8. Express these system specifications using the propositions 
$p$ “The user enters a valid password,” $q$ “Access is
granted,” and $r$ “The user has paid the subscription fee”
and logical connectives (including negations).

a) “The user has paid the subscription fee, but does not
enter a valid password.”

b) “Access is granted whenever the user has paid the
subscription fee and enters a valid password.”

c) “Access is denied if the user has not paid the subscription
fee.”

d) “If the user has not entered a valid password but has
paid the subscription fee, then access is granted.”

34. Five friends have access to a chat room. Is it possible to
determine who is chatting if the following information is
known? Either Kevin or Heather, or both, are chatting.
Either Randy or Vijay, but not both, are chatting. If Abby
is chatting, so is Randy. Vijay and Kevin are either both
chatting or neither is. If Heather is chatting, then so are
Abby and Kevin. Explain your reasoning.