1. $e \rightarrow a$ **3.** $g \rightarrow (r \wedge (\neg m) \wedge (\neg b))$ **5.** $e \rightarrow (a \wedge (b \vee p) \wedge r)$

7. **a)** $q \rightarrow p$ **b)** $q \wedge \neg p$ **c)** $q \rightarrow p$ **d)** $\neg q \rightarrow \neg p$ **9.** Not

7. **a)** $q \rightarrow p$ **b)** $q \wedge \neg p$ **c)** $q \rightarrow p$ **d)** $\neg q \rightarrow \neg p$ **9.** Not consistent **11.** Consistent **13.** NEW *AND* JERSEY

21. If the first professor did not want coffee, then he would know that the answer to the hostess's question was "no." Therefore the hostess and the remaining professors know that the first professor did want coffee. Similarly, the second professor must want coffee. When the third professor said "no," the hostess knows that the third professor does not want coffee. **23.** *A* is a knight and *B* is a knave. **25.**

der of decreasing salary: Fred, Maggie, Janice **39.** The detective can determine that the butler and cook are lying but cannot determine whether the gardener is telling the truth or whether the handyman is telling the truth. **41.** The