Logic Problems

1. **The story of the banker and a young lawyer**
   A banker, in a small midwestern town, made it a practice to loan money to young men starting into business. A young lawyer, who was just starting his practice in the community, borrowed money with an agreement that he would pay it back when he won his first case. The young lawyer used the money to outfit his office with a new set of law books and some plush furnishings, then he hung up a sign indicating he was open for business. Unfortunately for the lawyer, the other lawyers in the town were well established, and many months passed without a single case for him to work on.
   As time wore on, the banker became impatient for some return on his investment. Finally the banker told the young lawyer, "I am going to sue you for not returning my money. If I win the suit, you will pay me according to the judgement of the court; and if you win it, you'll have to pay me according to our agreement. Either way, you'll have to pay me back."
   "That's not true," the wily young lawyer replied. "If I win the suit, then by judgement of the court I won't have to pay you; if you win, then according to our agreement I'll not have to pay you."
   What is the logical solution to this problem?

2. **Telling the color of a hat.**
   Deep in the jungles of a far-off land, three mercenaries were taken prisoner. After several weeks in a dirty prison cell, they were told they would be given one last chance for freedom. The three prisoners we led under guard to an area where there was a large box containing three black hats and two white hats. The prisoners were then lined up, one behind the other, facing a wall in such a manner that they could see only in front of them.
   The prisoners were blindfolded and hats from the box placed on their heads. An officer in command gave a signal and the blindfold on the last man (farthest from the wall) was removed and he was permitted to look at the hats of the two men in front of him. If he could determine (not guess) the color of his hat, he would be freed. He was, however, unable to tell the color of the hat on his head.
   The blindfold was then taken from the head of the next man, who could only see the hat of the man in front of him. The man was given the same chance for freedom as the first man, but he was also unable to tell the color of his hat.
   The remaining man then immediately told the guards the color of the hat that he was wearing and he was right.
   If we assume that all three men were intelligent and each one could hear all conversation, how did the last man deduce the color and what is that color?

3. Your new roommate Sally has a boyfriend that has an identical twin brother. They look so much alike that you cannot tell them apart. You heard that one of them is very honest and one of them likes to lie (particularly when he is questioned). However, you do not know which one is Sally's boyfriend.
   One evening one of the twin brothers knocks on your door and Sally is not at home.

Can you ask just one true/false question to determine whether the visitor is Sally's boyfriend? If yes, what is the proper question? If no, why?