Problem of the Week
Solution Five

While walking on the island of knights and knaves, you meet Neelix, Odo and Poirot. You happen to know that exactly one of them is a werewolf. Neelix says, "Poirot is a werewolf." Odo says, "I am not a werewolf." Poirot says, "At least two of us are knaves." Is the werewolf a knight or is he a knave? Also, if you are choosing a travelling companion on a night with a full moon, and if you would rather not go walking with a werewolf, than who should you choose as your companion?

SOLUTION: The werewolf is a knave, and Neelix is definitely not a werewolf.

Let us start by supposing that Poirot is a knight. Then his statement is true, which means there really are at least two knaves. In particular, we must have that Neelix and Odo are knaves. That implies that Odo is a werewolf, since he is lying when he denies being one. Thus, if Poirot is a knight then Odo is a knave and a werewolf.

Now suppose that Poirot is a knave. Then his statement is false, implying that there is at most one knave. This would imply that Neelix and Odo are both knights. Since Neelix is telling the truth, we conclude that Poirot is a werewolf. In this case, the werewolf is again a knave, and in neither case is Neelix a werewolf. We are done.