Artificial Intelligence

Read the two classic papers by John Searle and Patricia and Paul Churchland. Please answer the following questions:

- What exactly are they arguing about? Can a computer think? Can a computer really understand something? These are vague questions; it's hard to know exactly what they mean. I would like to express it this way, is there something that our minds can do that no computer will ever be able to do, not because of some technical limitation but because of some basic principle? If there is such a thing, what is it and why can't computers do it? Here are four famous (controversial) versions of this question.
  - Searle argues that a machine can't derive syntax from semantics. Define these two words with the help of some examples. Do you think that Searle has proved his point?
  - David Chalmers (*The Conscious Mind*) argues that there are two kinds of consciousness: there is the *psychological* concept of mind, the explanatory basis for behavior, and the *phenomenal* concept, mind as conscious experience. Thomas Nagel asked the famous question, what is it like to be a bat? An animal (or a computer) has phenomenal consciousness if it is meaningful to ask, what is it like to be…? (Think about it. What is it like to be you?) Do Searle's or Churchlands' arguments touch on this issue? What is it like to be a computer??
  - Kurt Godel's famous theorem proves that there are true theorems that can never be proved. The mathematician Roger Penrose (Shadows of the Mind) puts it this way: (1) Theorems are proved by applying algorithms. (2) Computers can only think by applying algorithms. (3) Humans can think non-algorithmically. (4) Therefore, computers can never do all the things our minds do. Propositions (2) and (3) are controversial. What do you think? Can you think non-algorithmically? How would you know? (If you are not into math you can skip this question.)
  - The television series, *Star Trek: The Second Generation,"* featured a crew member, Commander Data. Data looked human (with a pale complexion) but was an android. His powers of algorithmic thought far exceeded ours, but he seemed human – except – he had no emotions. He was a consummate violinist but only because he had memorized the playing of all the great violinists of the past. (Or so he claimed.) Was Data human? The show handled this issue with great sensitivity. Are emotions the ultimate criterion for deciding what is human?
- Do you have anything to add? What does your intuition have to say about all this?