Name: _____

# CS 444 HW 1

1. How many nodes are in the complete search tree for the given state space graph? The start state is S. Recommend drawing it and then counting the nodes.

2. Depth-First Graph Search
   Consider a depth-first graph search on the graph below, where S is the start and G is the goal state. Assume that ties are broken alphabetically (so a partial plan S→X→A would be expanded before S→

   (a) An agent that senses only partial information about the state cannot be perfectly rational.

   (b) The input to an agent program is the same as the input to the agent function.

   (c) A perfectly rational poker playing agent never loses.

3. In your own words describe a reflex-based agent and a model-based agent. Then, compare and contrast these agents and provide a scenario where a model-based agent would work and a reflex-based agent would fail.

4. Given a computer with $n$ bits of storage, can you determine the maximum number of agent programs that can be constructed? If so, how many.

5. List the properties (detailed in section 2.3.2 and Figure 2.6) for an agent you are designing to bid on items via an Internet auction site (think Ebay). You can skip the known/unknown property.