TM algorithms (descriptions)

1. formal description
   - states
   - transitions
   - r/w head moves.

2. implementation description
   - tape changes
   - r/w head moves
   
   e.g. move r/w head right to the first blank

3. high level descriptions
   - describes what the alg. does
   - ignore r/w head
Objects
- polynomials
- graphs
- grammars

\[ \langle 0 \rangle \]
A: language of all strings representing graphs that are connected.

Machine M decides A (high level)

M = On input \( <G> \), the encoding of a graph G as a string.

1. select 1st node and mark it
2. repeat step 3 until no new nodes are marked
3. For each node in G
   mark it if there is an edge from G to a marked node.
4. Check if all nodes have been marked. If so, accept. If not, reject.
Implementation Level

\[ G : \begin{array}{c}
1 \\
2 \\
3 \\
4 
\end{array} \]

\[ \langle G \rangle = (1, 2, 3, 4)(1, 2, 1, 3, 2, 3, 1, 4) \]

0. check input
1. mark a node
2/3 mark w/ -

\[ G : \begin{array}{c}
1 \\
2 \\
3 \\
4 
\end{array} \]