(1) Consider the 3-tape Turing machine shown below.

```
0 1 ~ ~ ~ ~ ~ ~
```

```
a a a ~ ~ ~ ~ ~
```

```
a b ~ ~ ~ ~ ~ ~
```

a. (2 points) Draw the corresponding 1-tape Turing machine using methods described in class and in the book.

```
# 0 1 #a a a #a b # ~ ~ ~
```

b. (3 points) Assume the tape action on this configuration is (x,c,y),(L,R,R). What will the TM you drew in part a look like after implementing this step.

```
# x i #a a c ~ # y b # ~ ~
```
(2) (5 points) Let \( L = \{ ww^R \mid w \in \{0,1,\}^* \} \). Describe a Turing machine that decides \( L \). You may use any methods discussed in class or the text.

Use a 2-tape Turing machine
1. Check if the string is even. If not reject.
2. Copy \( w \) to the second tape.
3. Position first tape head at beginning of string and second tape head at end of string.
4. Compare the symbols one at a time. If they ever do not match, reject.
5. If the end of the string on tape 1 is reached, accept.