b) [4 Points] Given the values of the first eight leaves (counting from left to right), do we need to evaluate the ninth and tenth leaves? Explain why.

Given first 8 value, we have currently

$a = (2+1) \times 0.5 = 1.5$

$b = (-1+3) \times 0.25 = 0.5$

In order for b to beat a, the rest of b's value should be larger than $1.5 - 0.5 = 1$.

Suppose all the leaf node left is 4 (which is the maximum value), we get $(4+4) \times \frac{1}{4} = 2$, which is larger than 1. That means we still have a chance to beat a.

Therefore, we need to evaluate 9th and 10th leaf

c) [4 Points] After the first two leaves are evaluated, what is the value range for the left-hand chance node?

After evaluating first 2 leaves, a get $0.5 \times 2 = 1$

The lowest value for rest of a would be $-4 \times 0.5 = -2$.

The highest value for rest of a would be $4 \times 0.5 = 2$

Put all together, range for a is $[-1, 3]$