Rubinstein-Stahl bargaining model

The case of symmetric impatience: Same time discount rate for both players
Factor: \( .9708 = \frac{1}{1 + .03 \text{ each}} \)

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Just before the terminal nodes, at level 2, S will accept any offer made by B.

So at level 1, B offers 200. Payoff (B: 100, S: 0)

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Just before the terminal nodes, at level 3, B will accept any counteroffer made by S.

So, at level 2, if S makes a counteroffer, it will be 300.
Then S gets net 100 and this is worth \( 97.08 = \frac{100}{1.03} \) to S at level 2.
But if B had offered at least 297.08 at level 1, S would accept that and not make a counteroffer at level 2.

So, at level 1, B offers 297.08. Payoff (B: 2.92, S: 97.08)

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Just before the terminal nodes, at level 4, S will accept any counteroffer made by B.

So, at level 3, if B makes a counteroffer, it will be 200.
Then B gets net 100 and this is worth \( 97.08 = \frac{100}{1.03} \) to B at level 3.
So, at level 3, B would accept a price of 202.92.

At level 3, S gets surplus 2.92. Discounted once, this is \( 2.83 = 2.92 \times .9708 \). So at level 2, S would have agreed to a price of 202.83
And so that is what B offers at stage 1. Payoff (B: 97.17, S: 2.83)

Exercise  Analyze the same bargaining with five stages and symmetric patience.

Exercise  Analyze, for two, three, four, and five stages, the case of asymmetric patience.