

BAXA: PERSONAL PROJECT DANNY PAN

THE MARTINGALE STRATEGY

AND WHY IT DOESNT REALLY WORK

ASSUMPTIONS/CONDITIONS

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 - 18/37 or ~48.65% odds of getting one color



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- 2. Even Bets-** Put in $\$n$, win $\$n * 2$



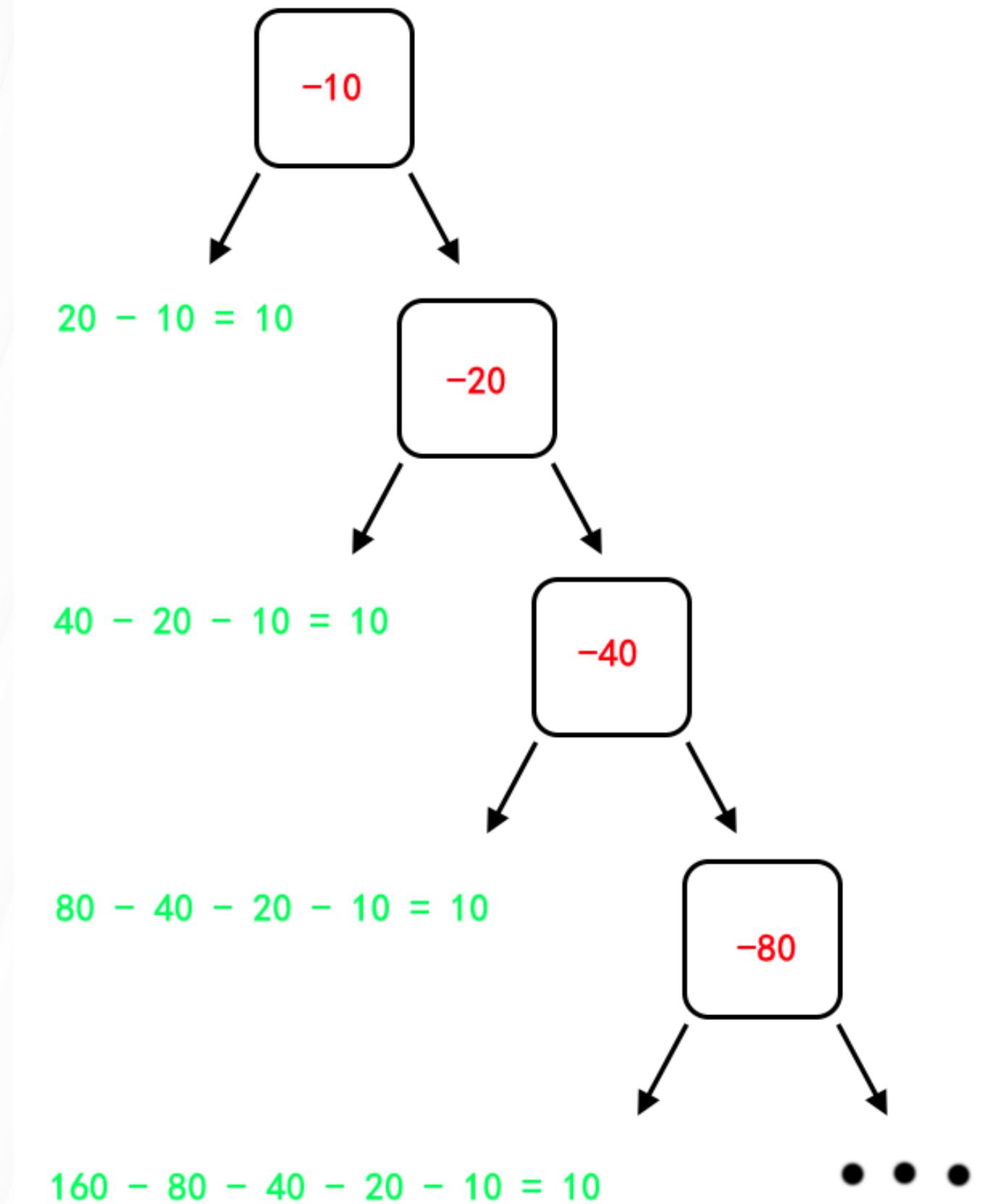
ASSUMPTIONS/CONDITIONS

- 1. European Wheel- One Zero (Green)**
 - $18/37$ or $\sim 48.65\%$ odds of getting one color
- 2. Even Bets-** Put in $\$n$, win $\$n * 2$
- 3. Wheel isn't rigged**



HOW THE MARTINGALE STRATEGY WORKS

- For a singular **session**, bet a starting amount (**s**) on any color
 - ex: \$10 on black
- If you win, congrats, you end your session with \$20 !
 - If you lose, **double down**, and bet another \$20
 - Repeat



THE PROBLEM

Your likelihood of walking away with money for each session is reliant on 2 main factors:

1- How high the betting limit is, or your budget (**B**)

- Doubled bets- your bet grows exponentially upon loss
 - $10 + 20 + 40 + 80 + 160 + 320 + 640 + 1280 = 2550$
 - Probability: $(19/37)^8 \approx 0.48\%$

THE PROBLEM

Your likelihood of walking away with money for each session is reliant on 2 main factors:

2- How low your starting bet (**s**) is, or the min. betting limit

- 2.5, 5, 10, 20, 40, 80, 160, 320, 640, 1280
 - Probability: $(19/37)^{10} \approx 0.13\%$
- However, this means you only earn \$2.5 per session

$$\left\lfloor \log_2 \left(\frac{\text{allotted_budget}}{\text{starting_bet}} + 1 \right) \right\rfloor$$

THE PROBLEM

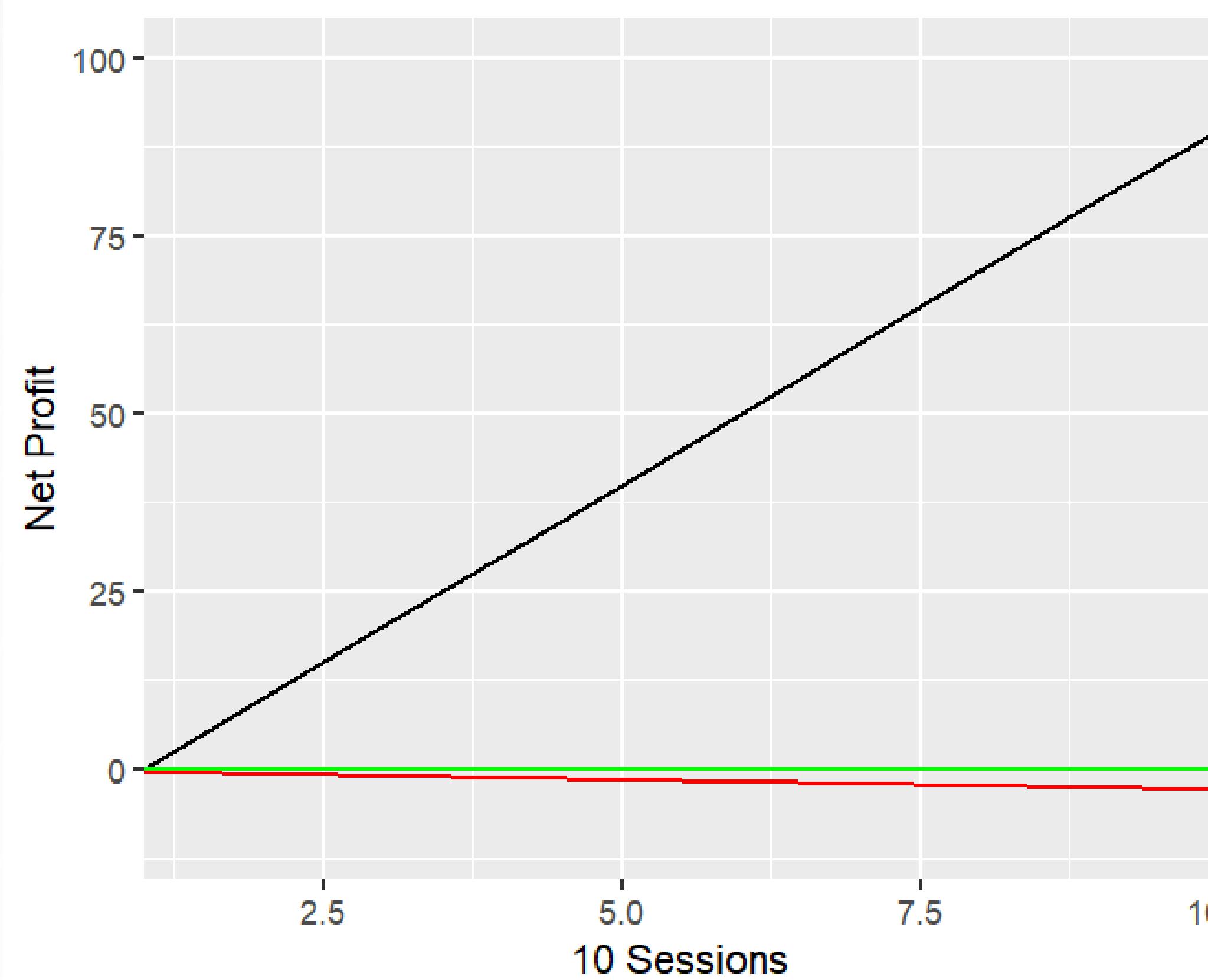
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-> **Each session, you either walk away with +s or -B**

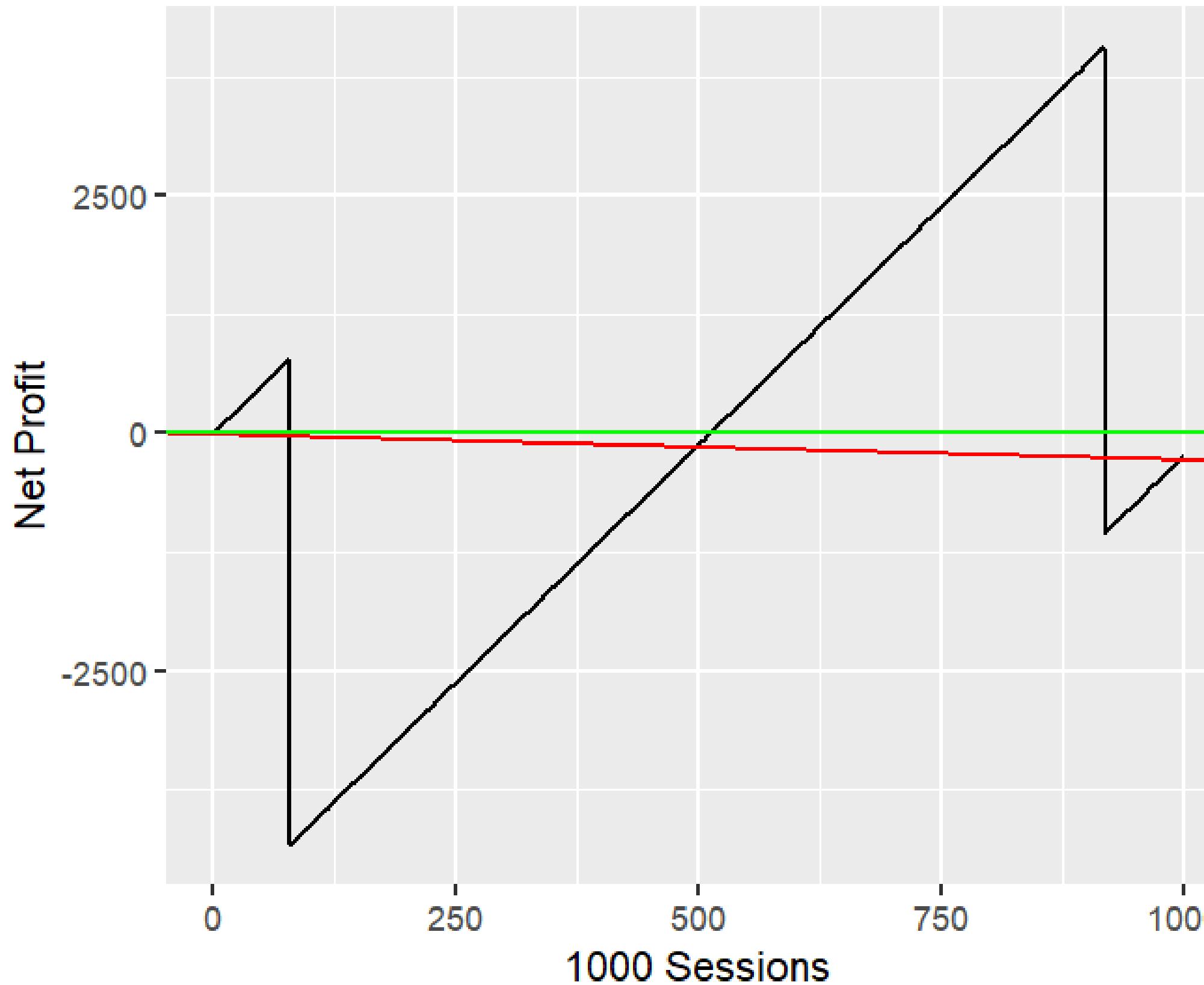
SIMULATION- 10 Sessions



Starting bet: \$10

Max bet/budget: \$10k

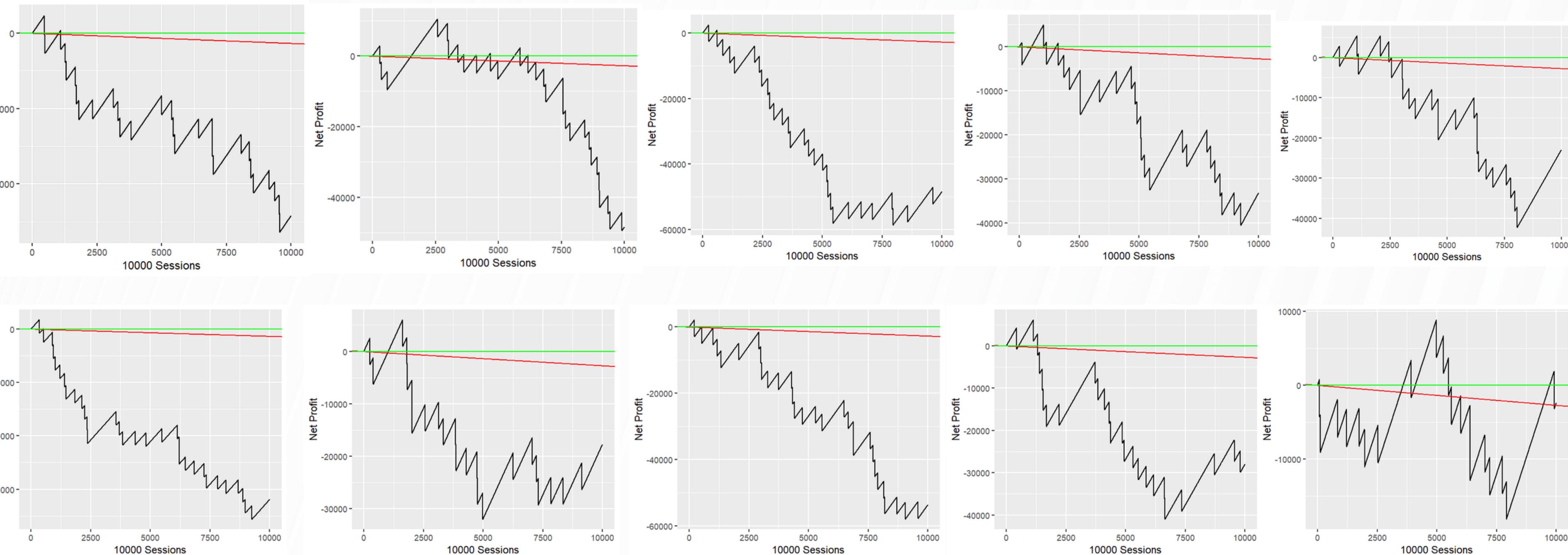
SIMULATION- 1000 Sessions



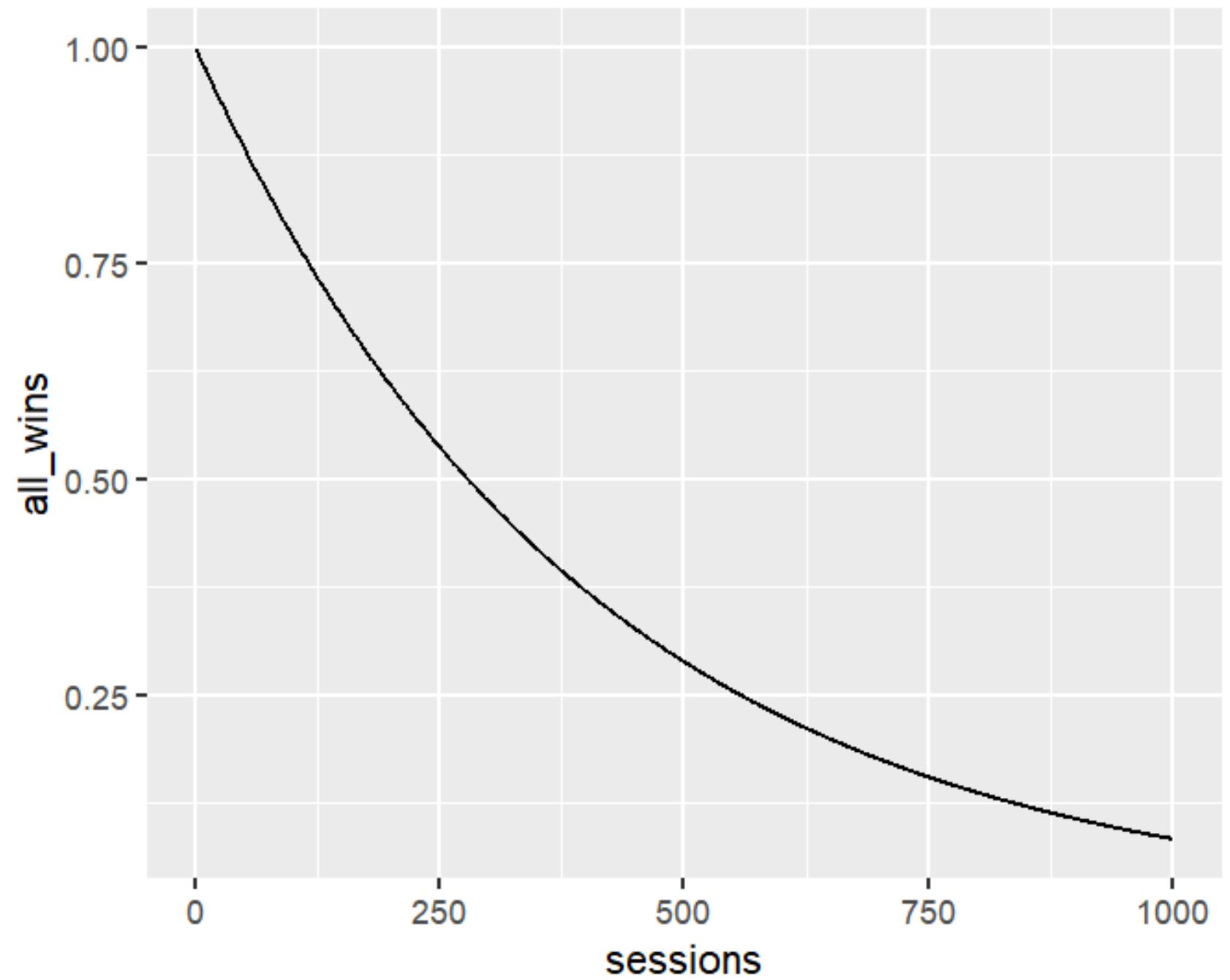
Starting bet: \$10

Max bet/budget: \$10k

SIMULATION- 10000 Sessions

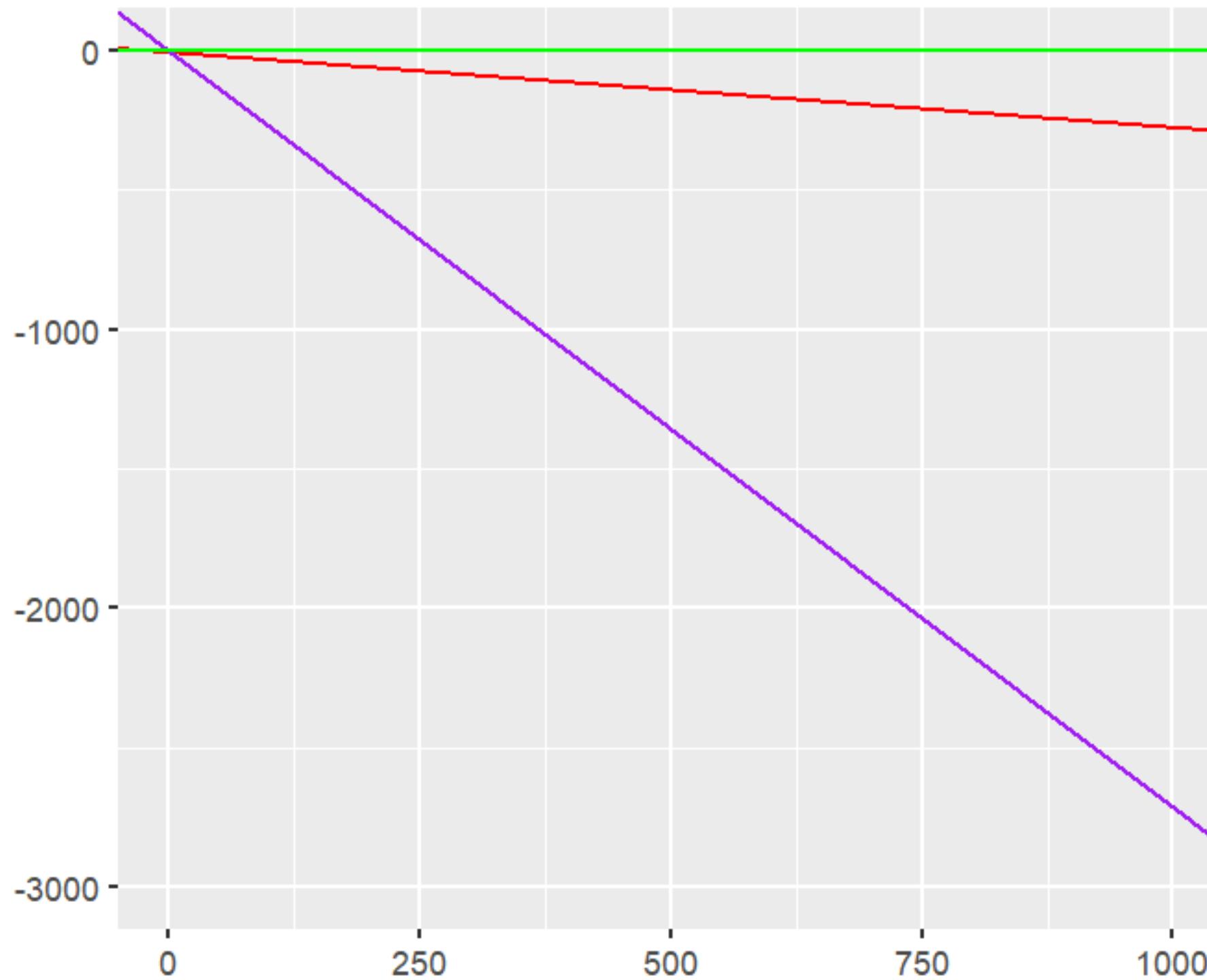


CONCLUSION



sessions	all_wins
1	0.9975171
2	0.9950403
3	0.9925696
4	0.9901052
5	0.9876468

CONCLUSION



$$\text{starting_bet} \cdot ((1 - (1 - \text{roulette_odds})^{\text{max_iterations}}) - (1 - \text{roulette_odds})^{\text{max_iterations}} \cdot (2^{\text{max_iterations}} - 1))$$

CONCLUSION

