BAXA: PERSONAL PROJECT

DANNY PAN

THE MARTINGALE STRATEGY

AND WHY IT DOESNT REALLY WORK

ASSUMPTIONS/CONDITIONS

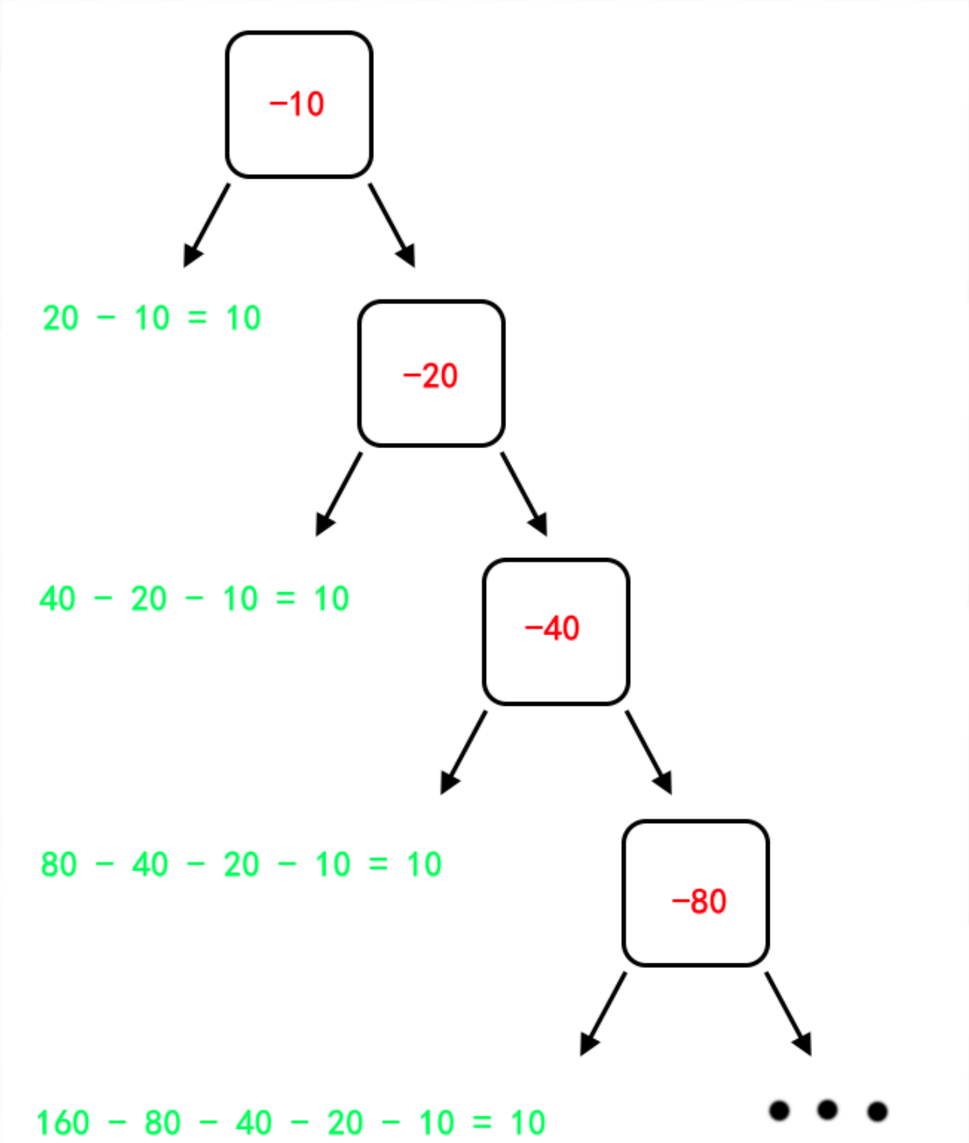
1. **European Wheel-** One Zero (Green)
    - 18/37 or ~48.65% odds of getting one color

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 ≈ 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 ≈ 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

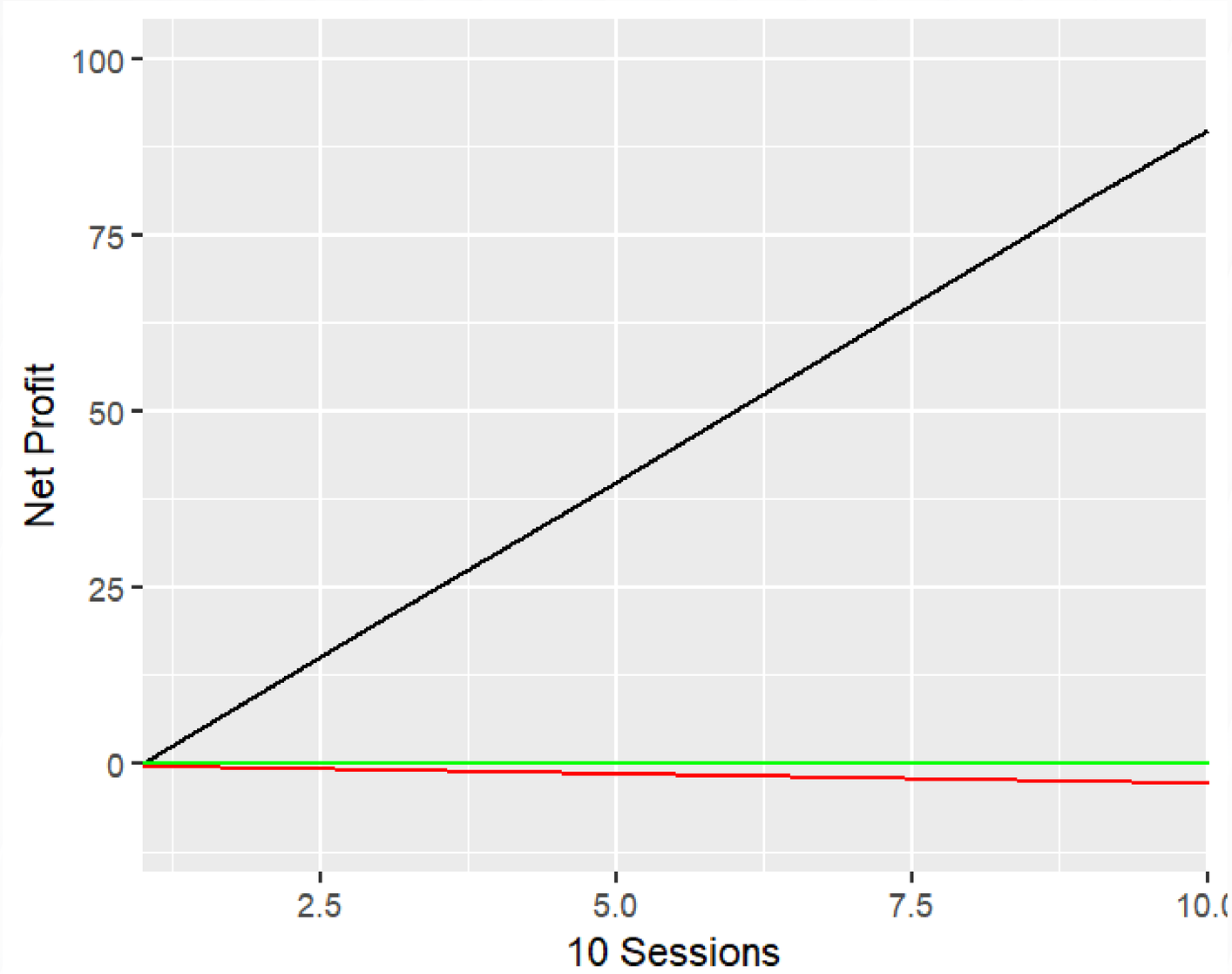
Your likelihood of walking away with money for each session is reliant on 2 main factors:

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 ≈ 0.13%
- However, this means you only earn $2.5 per session

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

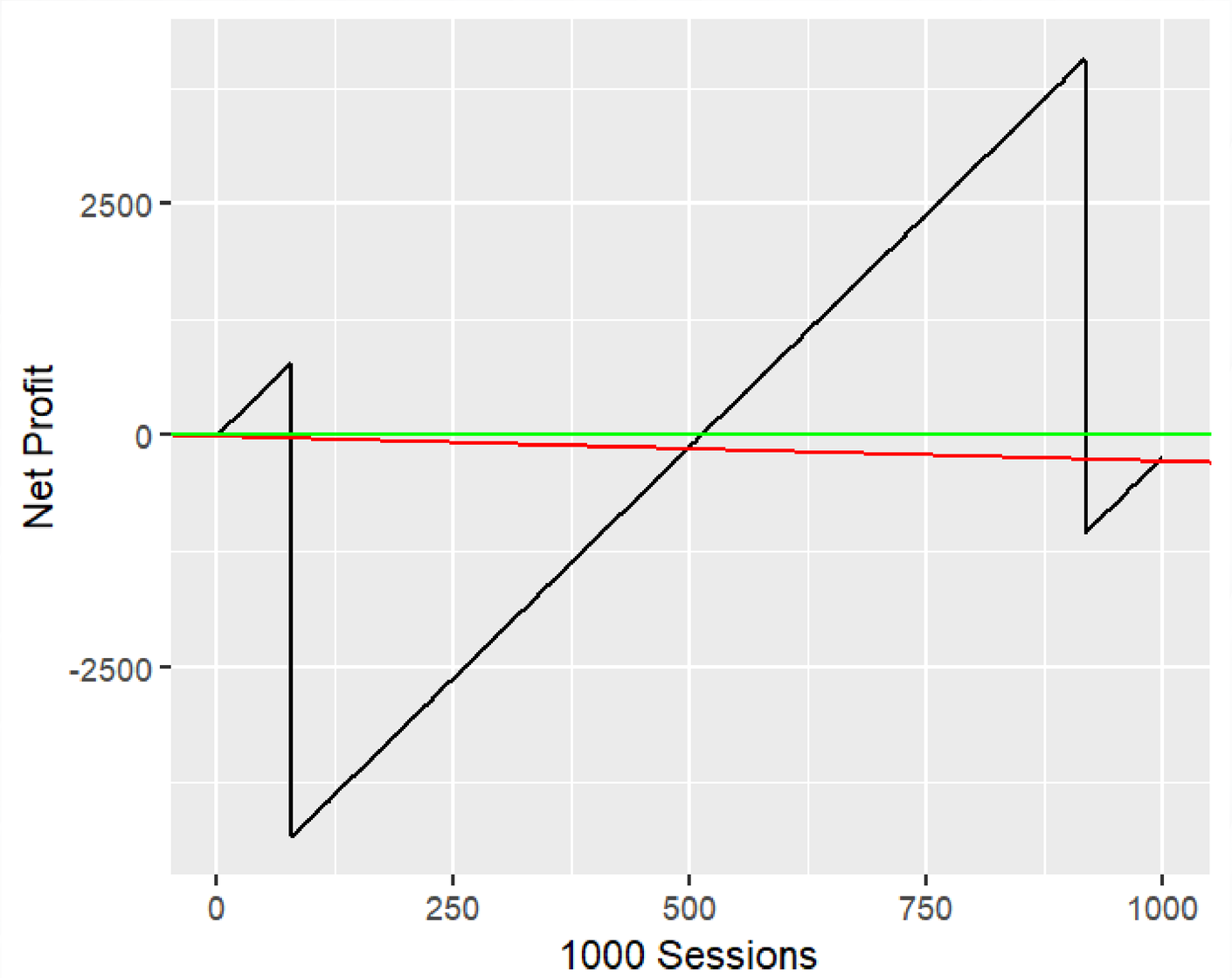
SIMULATION- 10 Sessions



Starting bet: $10

Max bet/budget: $10k

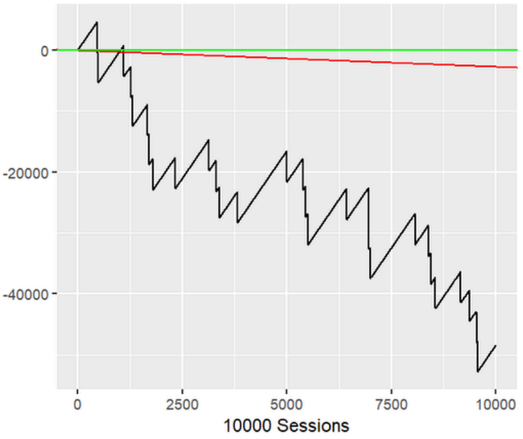
SIMULATION- 1000 Sessions

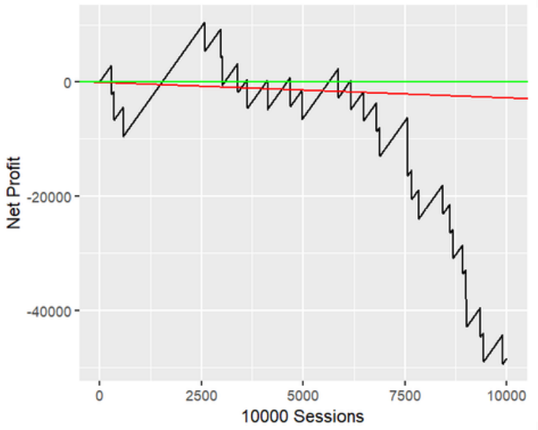


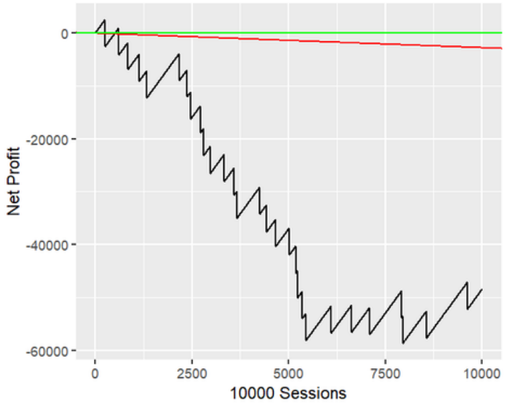
Starting bet: $10

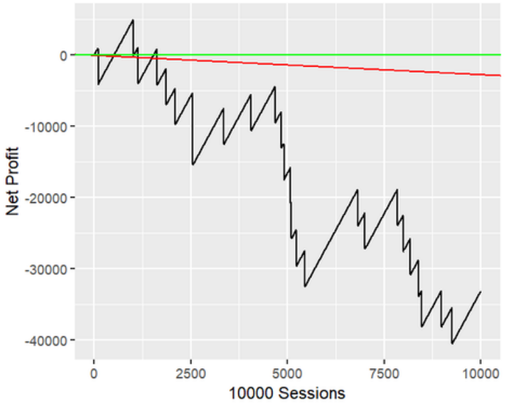
Max bet/budget: $10k

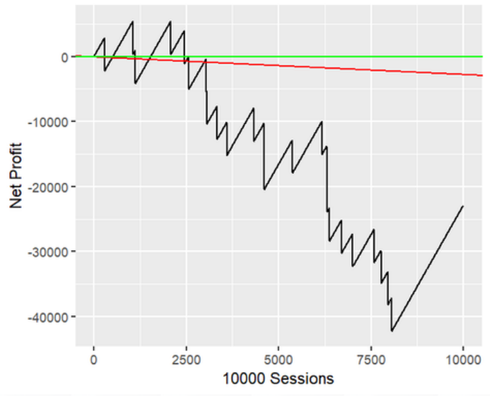
SIMULATION- 10000 Sessions

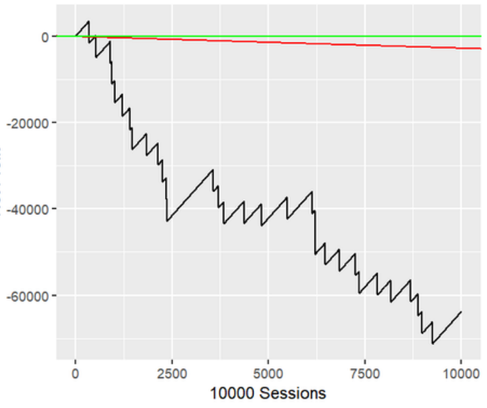


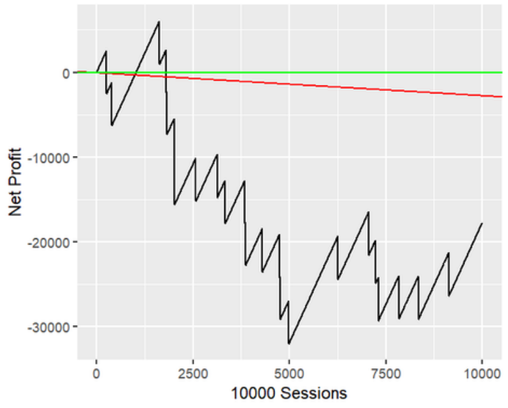


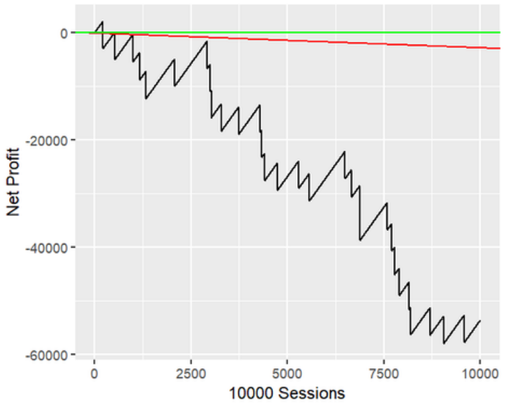


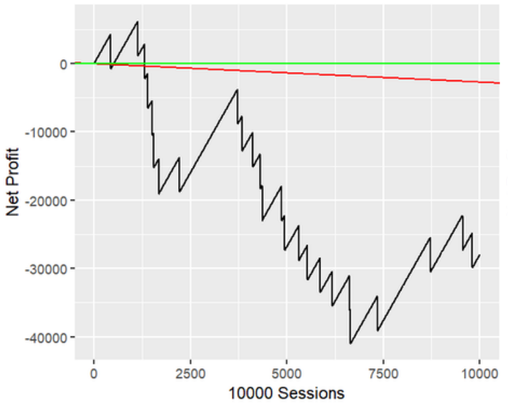


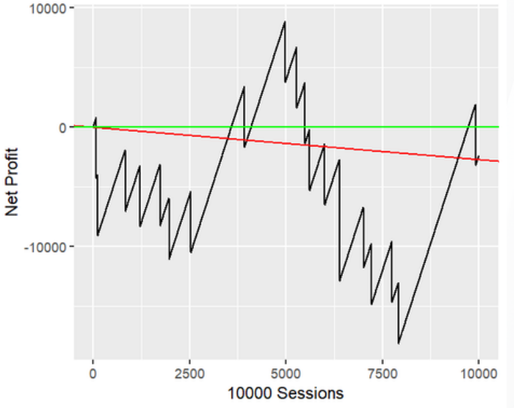




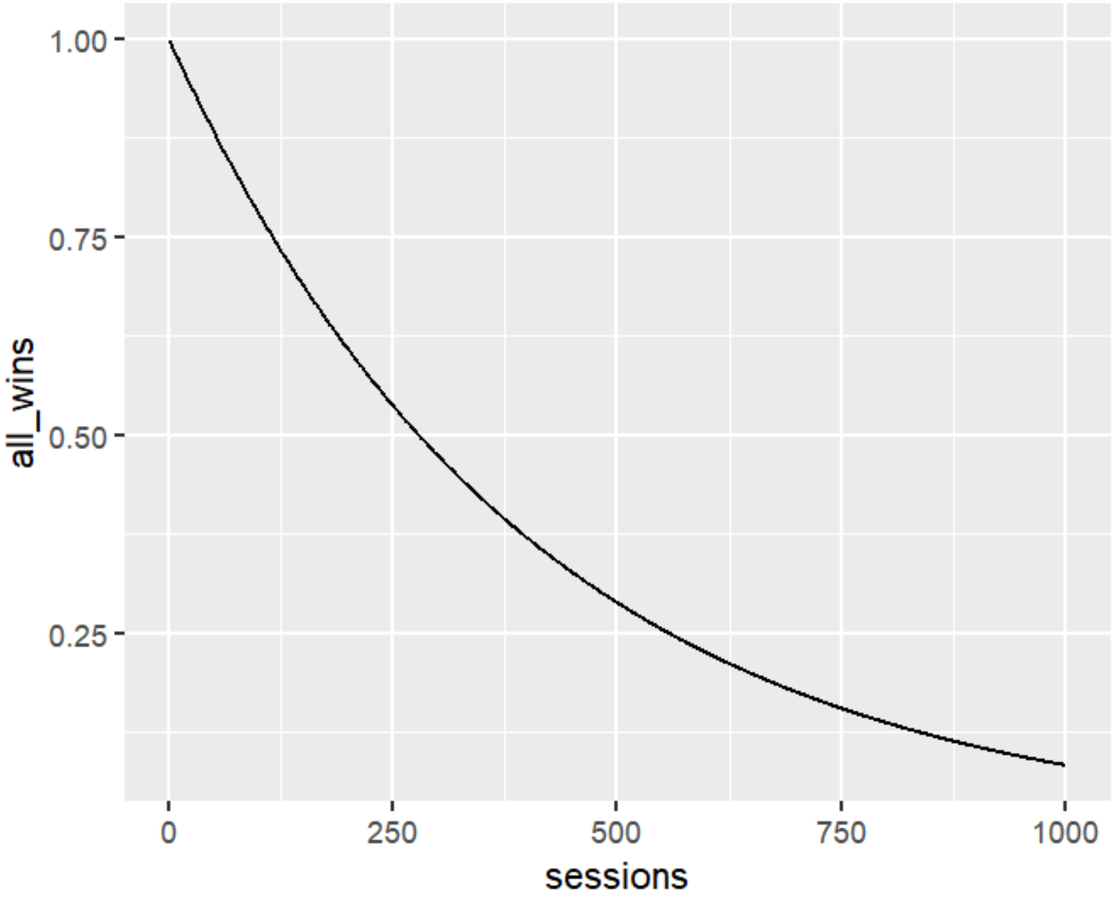






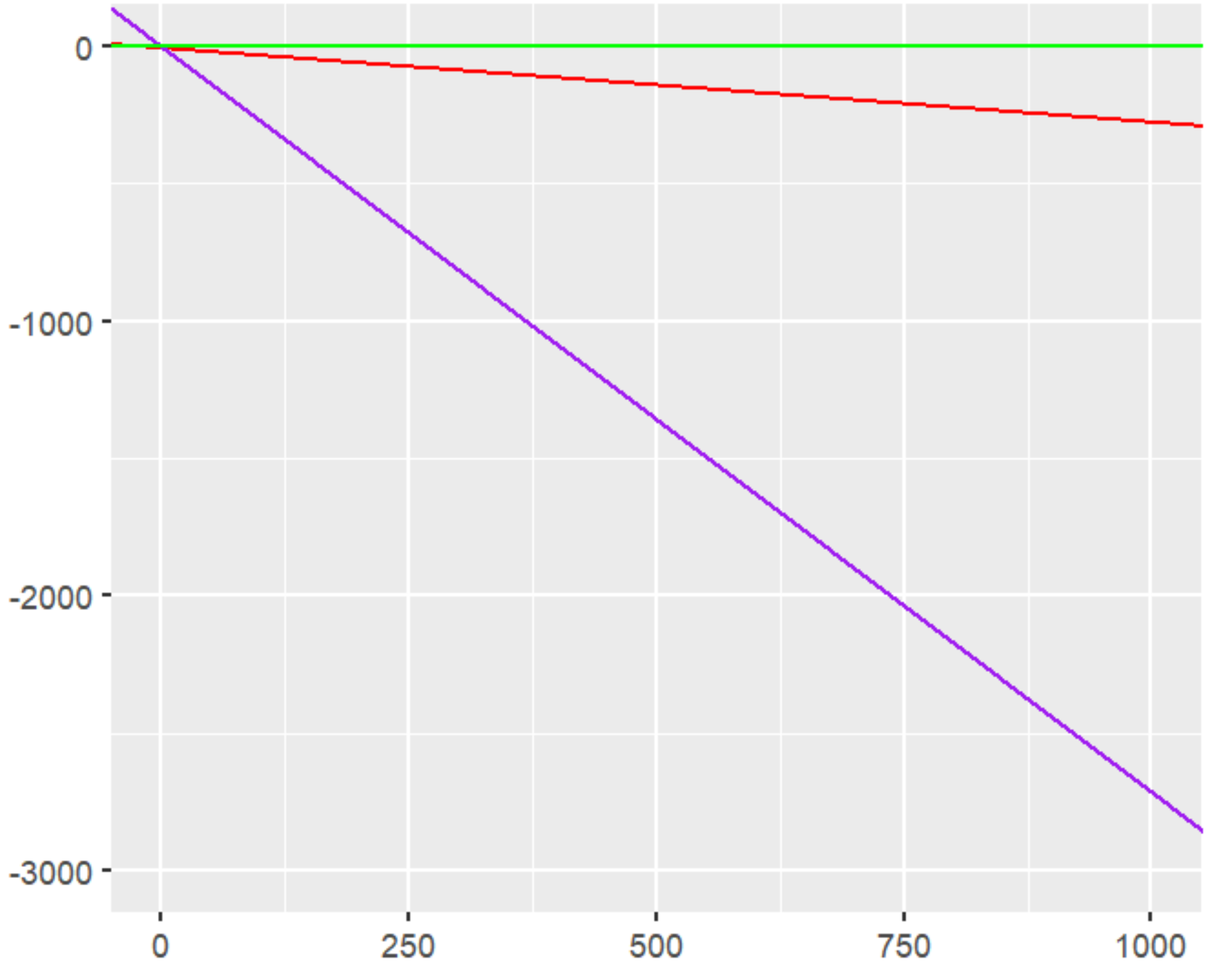


CONCLUSION



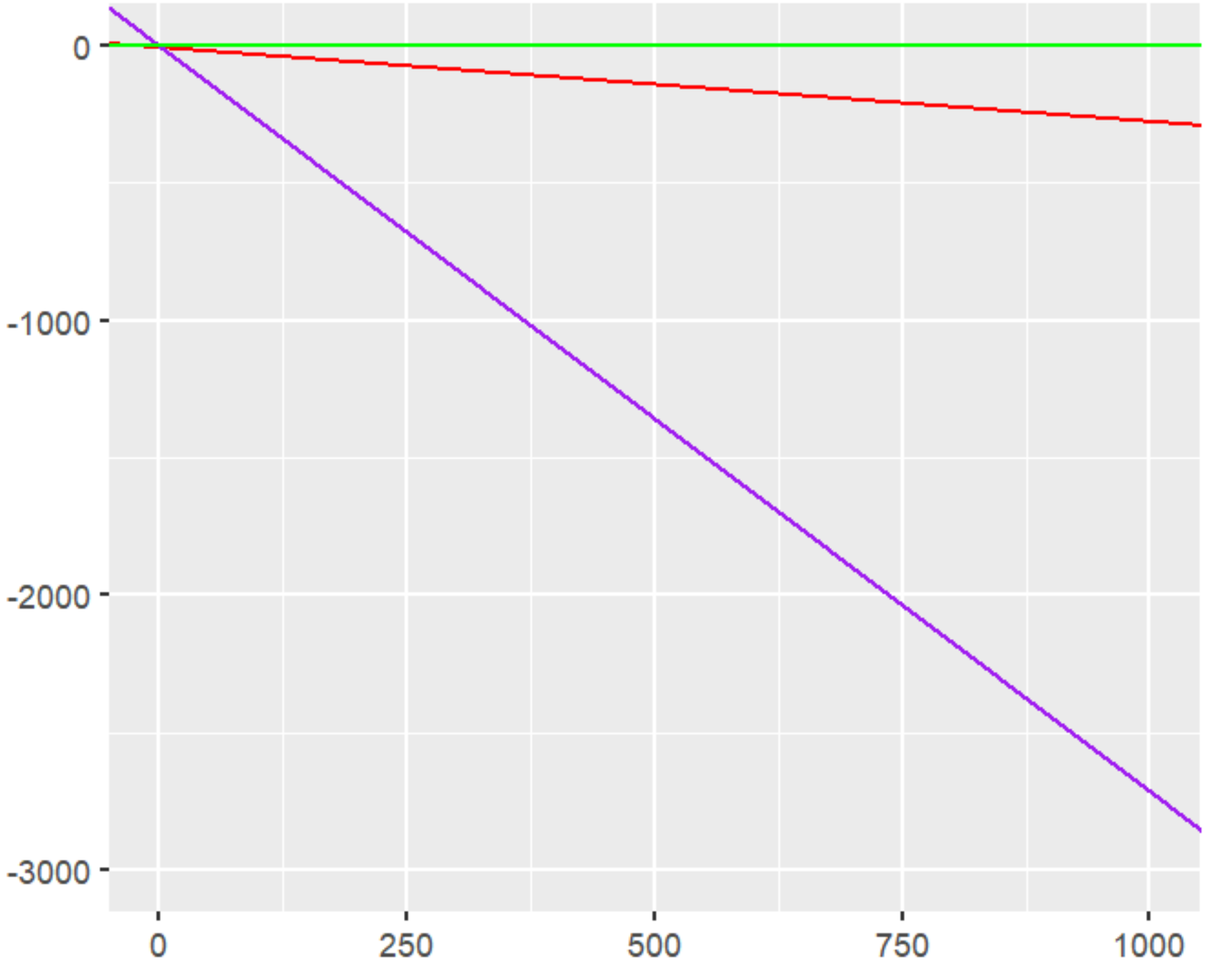
sessions	all_wins
1	0.9975171
2	0.9950403
3	0.9925696
4	0.9901052
5	0.9876468

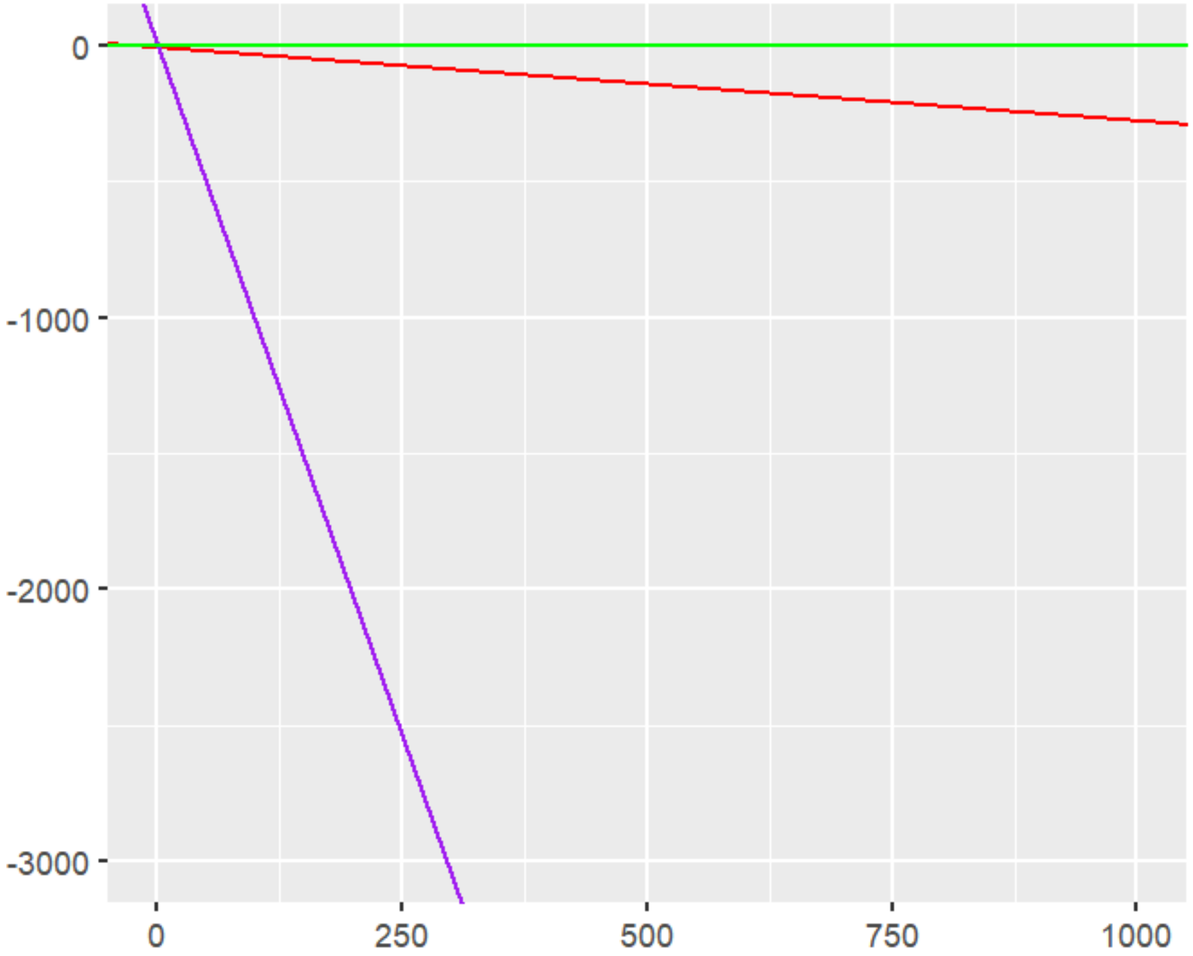
CONCLUSION



$$\text{starting\_bet} \cdot \left(\left(1 - (1 - \text{roulette\_odds})^{\text{max\_iterations}} \right) - (1 - \text{roulette\_odds})^{\text{max\_iterations}} \cdot \left(2^{\text{max\_iterations}} - 1 \right) \right)$$

CONCLUSION


0
-1000
-2000
-3000
0
250
500
750
1000


0
-1000
-2000
-3000
0
250
500
750
1000