

Quiz 3

Prob-Stats 3350
 Fall 2008, R. Simm

Name _____

Directions

- Please show all work.
- You may use the graphing calculator of your choice.
- Provide EXACT representations of your probabilities as well as ESTIMATES.

1. [6 pts] Hero holds TT preflop. He raises from EP, and gets 4 callers. The flop comes A J 7. He figures to be ahead if no one "caught a peice of the flop." The probability of any player "hitting the flop" is roughly $\frac{1}{3}$. What is the probability that:

- (a) All 4 opponents "miss the flop."
- (b) At least 2 opponents "miss the flop."
- (c) Exactly 3 opponents "miss the flop."

Solutions

- (a) $P = \left(\frac{2}{3}\right)^4$
- (b) $P = \sum_{k=2}^4 \binom{4}{k} \left(\frac{2}{3}\right)^k \left(\frac{1}{3}\right)^{4-k} = \frac{8}{9}$
- (c) $P = \binom{4}{3} \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right) = \frac{32}{81}$

2. An urn holds 60 blue, 30 red and 10 green marbles. Find the probability that, if 5 are drawn without replacement:

- (a) At least 3 are blue.
- (b) None are red.

Solutions

- (a) $P = \frac{\binom{60}{3}\binom{40}{2} + \binom{60}{4}\binom{40}{1} + \binom{60}{5}\binom{40}{0}}{\binom{100}{5}} = \frac{1076219}{1568490} = 0.68615$
- (b) $P = \frac{\binom{70}{5}}{\binom{100}{5}} = \frac{26197}{162960} = 0.16076$