

## Final MATH 208 (Question 4)

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MATH 208 - Final

(A)

```
one_turn = function(init_hare, init_turt){  
  hare_probs = c(0, 5)  
  turt_probs = c(2, 4)  
  
  init_hare = init_hare + sample(hare_probs, 1)  
  init_turt = init_turt + sample(turt_probs, 1)  
  
  return(c(init_hare, init_turt))  
}  
  
full_game = function(seed){  
  set.seed(seed)  
  hare_position = 0  
  turtle_position = 0  
  hist = list()  
  i = 1  
  while(hare_position < 100 & turtle_position < 100){  
    updated_positions = one_turn(hare_position, turtle_position)  
  
    hist[i] = list(updated_positions)  
    i = i + 1  
    hare_position = updated_positions[[1]]  
    turtle_position = updated_positions[[2]]  
  }  
  if(hare_position >= 100){  
    return(c(winner="Hare", tibble(History=hist)))  
  }  
  return(c(winner="Turtle", tibble(History=hist)))  
}
```