Discussion\_9

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1 Let S100 be the number of heads that turn up in 100 tosses of a fair coin. Use the Central Limit Theorem to estimate

### a)

n <- 100  
p <- 0.5  
var <- 25  
sd <- sqrt(var)  
mu <- n\*p  
  
a.result <- (45.5- 50)/5

The probability that number of heads that turn up in 100 tosses of a fair coin is less than 45 is = 0.1840601

p\_a\_result <- pnorm(a.result)  
p\_a\_result

## [1] 0.1840601

### b)

The probability that number of heads that turn up in 100 tosses of a fair coin is bwt 45-55 is = 0.7308344

b\_result <- pnorm(1.1) - pnorm(-1.11)  
b\_result

## [1] 0.7308344

### c)

**Binomial change sign**

c.result <- 13.5/5  
c.result

## [1] 2.7

1 - pnorm(c.result)

## [1] 0.003466974

### d)

d.result <- 7.5 / 5  
d.result

## [1] 1.5

pnorm(1.5)

## [1] 0.9331928