Solution 3.a-c, R code and results:

#a) to calculate the results using pnorm fuctione:

```
prob<-pnorm(60.5,50,5)-pnorm(53.5,50,5)
sprintf('By calculation, the probability to get 54~60 heads is %.4f',prob)
```

```
## [1] "By calculation, the probability to get 54~60 heads is 0.2241"
```

#b) Simulate the flips

```
flips<- function() {
   s<- sample(c(0,1),size=100,replace=TRUE)
   return(sum(s))
}

#the random seed
set.seed(10000)
x<- replicate(10000,flips())
prob2<-sum(x>=54 & x<=60)/10000
sprintf('By simulation, the fraction to get 54~60 heads is %.4f',prob2)
```

```
## [1] "By simulation, the fraction to get 54~60 heads is 0.2239"
```