question7

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library(purrr)  
library(tidyr)  
library(ggplot2)

## Question 7

#building the posterior function with parameters  
#theta given in the question  
#y given in the question  
  
postE<- function(theta, y){  
 n= seq(1:10) + y  
 like =dbinom(y,n,theta)  
 prior= dpois(n,5)  
 fy = sum(like\*prior)  
 post= like\*prior/fy  
 return(cbind(theta= theta, y = y, n = n, post = post))  
}  
  
#loop throught theta and y to create list of various combinations  
df<- map2(c(.2,.5)%>%rep(3)%>%map(~..1),c(0,5.,10.)%>%rep(2)%>%sort()%>%map(~..1), ~postE(..1, ..2))  
  
#flaten out dataframes in list as one dataframe  
data<- df[[1]]%>%rbind(df[[2]])  
  
for(i in 3:6){  
 data= rbind(data, df[[i]])  
}  
  
#plot the dataframes  
ggplot(as.data.frame(data), aes(y = post,x = n))+ geom\_line()+ facet\_grid(theta~y)+labs(title = "Posterior of binominal with prior poi(5)")

