```
1)> mat1<-matrix(c(1,2,3,4),2, byrow = T)
> mat2<-matrix
> mat2<-matrix(c(5,6,7,8),2, byrow = T)
> mat1%*%mat2
     [,1] [,2]
[1,]   19   22
[2,]   43   50

2)mat3<-matrix(c(.5, .5, .25,.75), 2, byrow = T)
> mat4<-matrix(c(.33,.67,.67,.33), 2, byrow = T)
> mat3%*%mat4
      [,1]  [,2]
[1,] 0.500 0.500
[2,] 0.585 0.415

3)>mat3%^%2
        [,1]   [,2]
[1,] 0.3750 0.6250
[2,] 0.3125 0.6875

4)> mat3 %^% 3
          [,1]     [,2]
[1,] 0.343750 0.656250
[2,] 0.328125 0.671875


5) > mat5<-matrix(c(.15,.85,.001,.999),2, byrow = T)
> mat6<-matrix(c(.02,.98,.19,.81),2, byrow = T)
> (mat5%^%4)+(mat6%^%7)
          [,1]     [,2]
[1,] 0.1640571 1.835943
[2,] 0.1635683 1.836432


6) > mat7<-matrix(c(1,2), 1, byrow = T)
> mat7%*%mat2
     [,1] [,2]
[1,]   19   22


7) > mat8<-matrix(c(.08,.92),1, byrow = T)
> mat9<-matrix(c(.375,.625,.399,.601),2, byrow = T)
> mat8%*%mat9
        [,1]    [,2]
[1,] 0.39708 0.60292


8) > mat8%*%(mat9%^%2)
          [,1]      [,2]
[1,] 0.3894701 0.6105299


9) > mat10<-matrix(c(.5,.5),1, byrow = T)
> mat11<-matrix(c(.5,.5,.5,.5), 2, byrow = T)
> mat10%*%(mat11%^%2)
     [,1] [,2]
[1,]  0.5  0.5


> mat12<-matrix(c(.014,.986),1, byrow = T)
> mat13<-matrix(c(.135,.865,.501,.499),2, byrow = T)
```

```
> mat12%*%(mat13%^%7)
          [,1]      [,2]
[1,] 0.3670746 0.6329254
```