

R Notebook

```
exercise3 #1 tmpFn1 <- function(x){ x^(1:length(x)) }
```

2

```
tmpFn2 <- function(x){ (x^(1:length(x)))/(1:length(x)) }  
tmpFn3 <- function(x,n){ 1+sum(x^(1:n))/(1:n)) }  
tmpFn <- function(xVec){ n <- length(xVec) (xVec[-c(n-1:n)] + xVec[-c(1,n)] + xVec[-c(1,2)])/3 }
```

3

```
tmpFn <- function(xVec){ ifelse(xVec<0,xVec^2+2xVec+3,ifelse(xVec<2,xVec+3,xVec^2+4xVec-7)) }  
tmp<-seq(-3,3,len=100) plot(tmp, tmpFn(tmp), type="l")
```

4

```
tmp <- function(x){ x[x%%2==1]<-2*x[x%%2==1] x }
```

5

```
tmp <- function(x,n){ tmp <- diag(x,nrow<-n,ncol<-n) tmp[abs(col(y)-row(y))==1]<-1 tmp }
```

6

```
quadrant<-function(alpha){ floor(alpha/90)%%4+1 }
```

7

```
weekday2 <- function(day, month, year) { flag <- (month <= 2) month <- month-2+12flag year <- year-flag  
cc <- year%%100 year <- year%%100 tmp <- floor(2.6month-0.2)+day+year+year%%4+cc%%4-2*cc  
c("Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday")[1+tmp%%7] }
```

8

```
testLoop<-function(n){ x<-rep(NA,n-1) x[1]<-1 x2<-2 for (i in 3:n-1){ x[i]<-x[i-1]+2/x[i-1] } x }  
testLoop2<-function(yVec){ sum(exp(seq(along=yVec))) }
```

9

```
quadmap<-function(start,rho,niter){ x<-rep(NA,niter) x[1]<-start for (i in 1:(niter-1)){ x[i+1]<-rho*x[i]/(1-x[i])
} x }
```

```
quadmap2 <- function(start, rho) { x1 <- start x2 <- rho * x1 * (1 - x1) niter <- 1 if(abs(x1-x2) > 0.02) {
x1 <- x2 x2 <- rho*x1*(1 - x1) niter <- niter + 1 } niter }
```

10

```
tmpFn<-function(xVec){ n<-length(xVec) xmean<-mean(xVec) x<-(xVec-xmean) r1<-sum(x[2:n]*x[1:(n-1)])/sum(x^2) r2<-sum(x[3:n]*x[1:(n-2)])/sum(x^2) list<-(r1 = r1, r2 = r2) }
```

```
tmpFnb<-function(x){ xc<-x-mean(x) n<-length(x) tmpFn<-function(j){ sum( xc[(j+1):n]*xc[1:(n-j)]
)/sum(xc^2) } c(1, sapply(1:k, tmpFn)) } }
```