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Data Frame

```
df = data.frame(
  "semana" = 1:12,
  "Galones de gasolina (Miles)" = c(17, 21, 19, 23, 18, 16, 20, 18, 22, 2
0, 15, 22)
)
t = 1:12
y = c(17, 21, 19, 23, 18, 16, 20, 18, 22, 20, 15, 22)
df
```

```
##    semana Galones.de.gasolina..Miles.
## 1       1                          17
## 2       2                          21
## 3       3                          19
## 4       4                          23
## 5       5                          18
## 6       6                          16
## 7       7                          20
## 8       8                          18
## 9       9                          22
## 10     10                          20
## 11     11                          15
## 12     12                          22
```

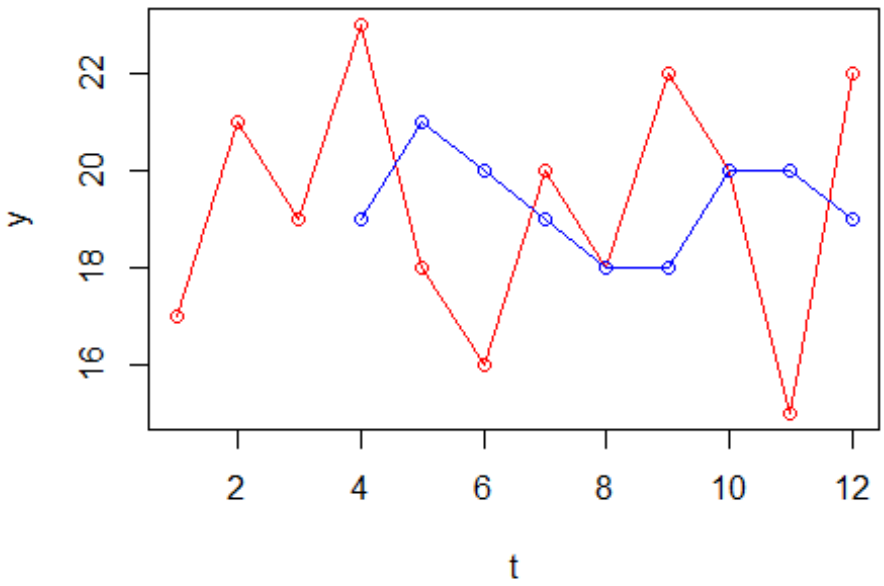
Promedios Móviles

```
n = 12
p1 = NA
e1 = NA



for(i in 1:(n-3)){p1[i+3]=(y[i]+y[i+1]+y[i+2])/3; e1[i+3] = p1[i+3] -
y[i+3]}

CME1=mean(e1^2,na.rm=TRUE)

T1=data.frame(t,p1,y,e1^2)
T1
```

```
##     t p1  y e1.2
## 1   1 NA 17   NA
## 2   2 NA 21   NA
## 3   3 NA 19   NA
```

```
## 4   4 19 23   16
## 5   5 21 18    9
## 6   6 20 16   16
## 7   7 19 20    1
## 8   8 18 18    0
## 9   9 18 22   16
## 10 10 20 20    0
## 11 11 20 15   25
## 12 12 19 22    9
```

```
plot(t, y,type='o',col='red')
x = 1:n
lines(x,p1[x],type='o',col='blue')
```



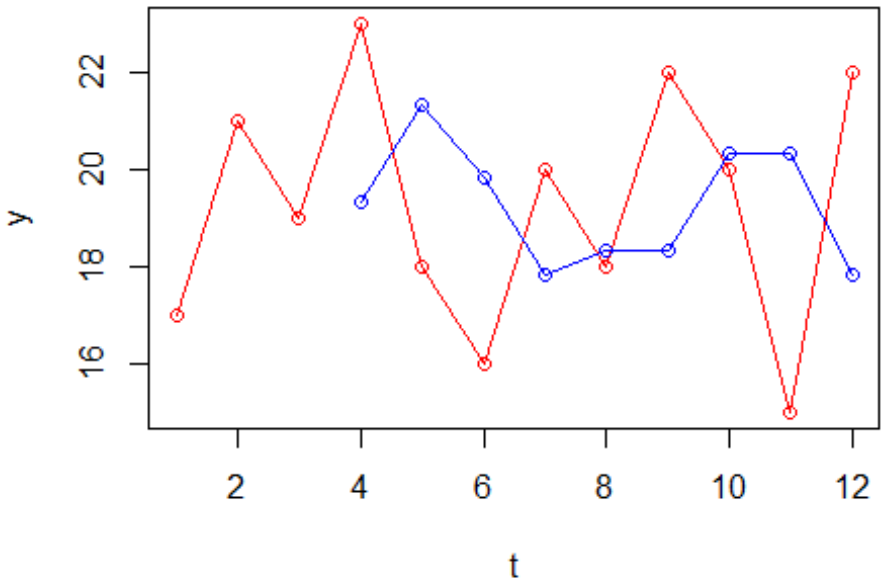
Promedios Móviles Ponderados

```
p2 = NA
e2 = NA
for(i in 1:(n-3)){p2[i+3]=(1/6)*y[i]+(2/6)*y[i+1]+(3/6)*y[i+2]; e2[i+3] =
p2[i+3] - y[i+3]}
CME2=mean(e2^2,na.rm=TRUE)

T2=data.frame(t,p2,y,e2^2)
T2
```

```
##     t       p2  y       e2.2
## 1   1       NA 17         NA
```

```
## 2   2       NA 21         NA
## 3   3       NA 19         NA
## 4   4 19.33333 23 13.4444444
## 5   5 21.33333 18 11.1111111
## 6   6 19.83333 16 14.6944444
## 7   7 17.83333 20  4.6944444
## 8   8 18.33333 18  0.1111111
## 9   9 18.33333 22 13.4444444
## 10 10 20.33333 20  0.1111111
## 11 11 20.33333 15 28.4444444
## 12 12 17.83333 22 17.3611111
```

```
plot(t, y,type='o',col='red')
x = 1:n
lines(x,p2[x],type='o',col='blue')
```



Método de suavizamiento exponencial

```
p3 = NA
e3 = NA
p3[1]=y[1]
p3[2]=y[1]
a=0.20
for(i in 2:n){p3[i]=a*y[i-1]+(1-a)*p3[i-1]; e3[i] = y[i]- p3[i]}
CME3=mean(e3^2,na.rm=TRUE)
```

```r
T3=data.frame(t,p3,y,e3^2)
T3
```

```
##     t       p3  y       e3.2
## 1   1 17.00000 17         NA
## 2   2 17.00000 21 16.0000000
## 3   3 17.80000 19  1.4400000
## 4   4 18.04000 23 24.6016000
## 5   5 19.03200 18  1.0650240
## 6   6 18.82560 16  7.9840154
## 7   7 18.26048 20  3.0259298
## 8   8 18.60838 18  0.3701311
## 9   9 18.48671 22 12.3432263
## 10 10 19.18937 20  0.6571279
## 11 11 19.35149 15 18.9354879
## 12 12 18.48119 22 12.3819951
```

```r
plot(t, y,type='o',col='red')
x = 1:n
lines(x,p3[x],type='o',col='blue')
```