

Check for stationarity

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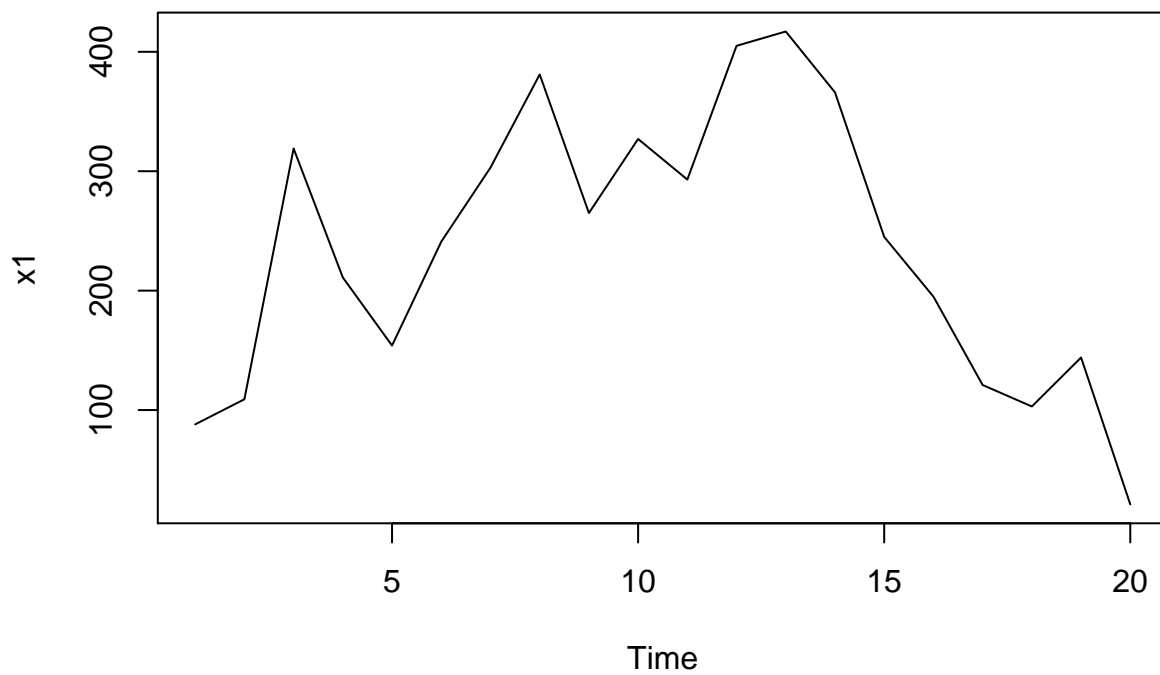
Consider the artificial series x_1 and x_2 :

```
x1 <- c(88, 109, 319, 211, 154, 241, 303, 381, 265, 327, 293, 405, 417, 366, 245, 195, 121, 103, 144, 2  
x2 <- c(26, 156, 236, 526, 509, 537, 699, 768, 982, 968, 956, 1282, 1347, 1187, 1442, 1611, 1600, 1797,
```

For each:

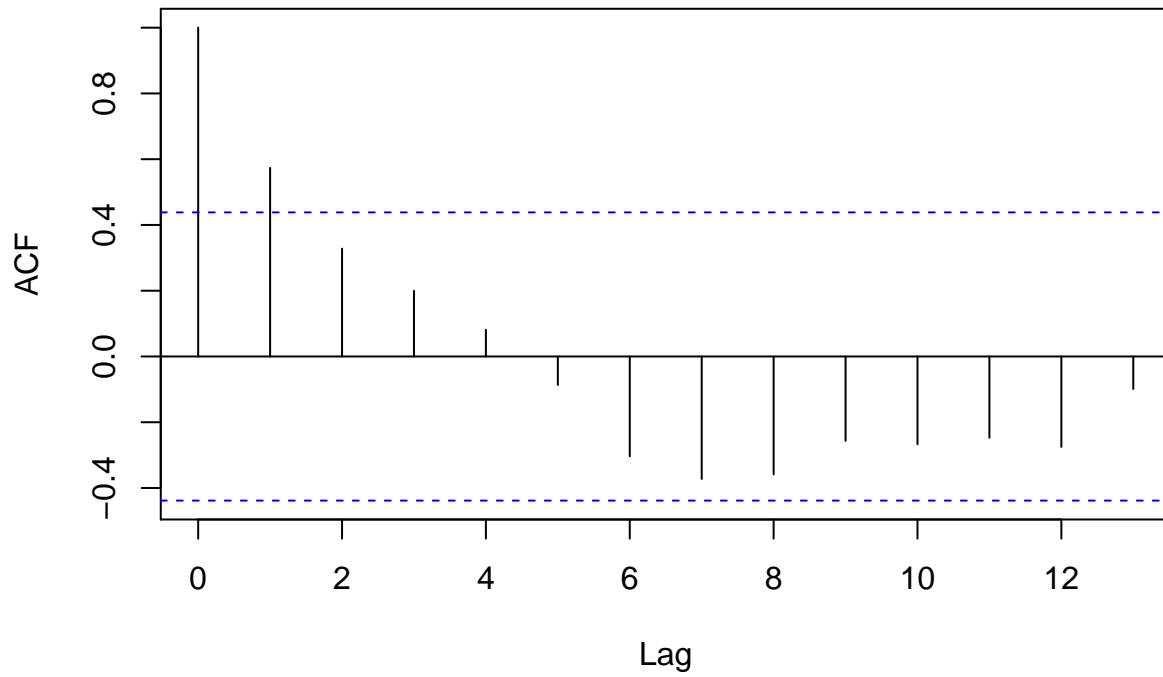
- Check whether the data behaves stationary
- If it does, calculate its mean and variance
- If not, try to detrend it

```
ts.plot(x1) # looks stationary
```



```
acf(x1)
```

Series x1



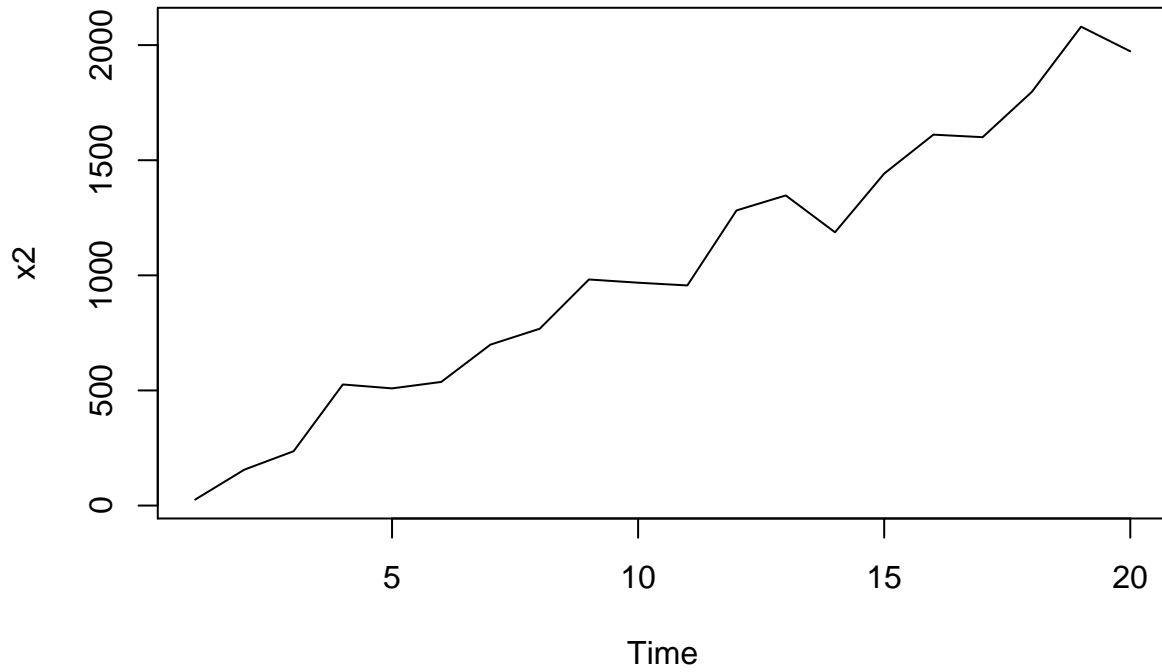
```
mean(x1)
```

```
## [1] 235.4
```

```
var(x1)
```

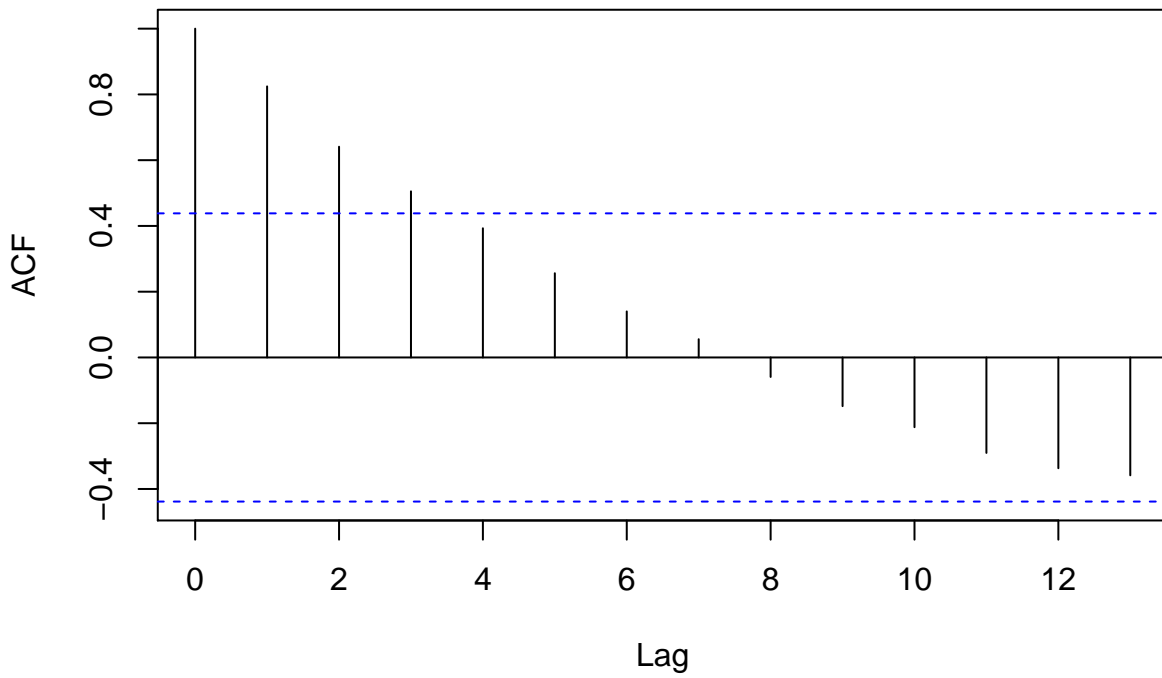
```
## [1] 13461.09
```

```
ts.plot(x2) # does not look stationary - linearly increasing trend
```



```
acf(x2)
```

Series x2

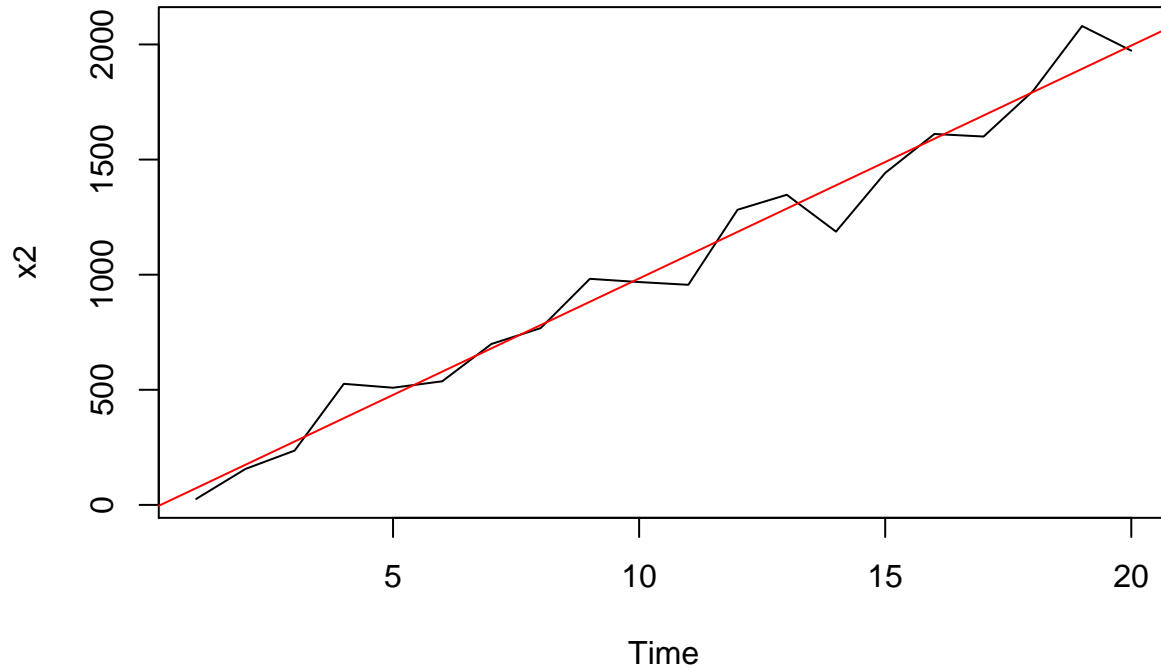


```
lm(x2~I(1:20))
```

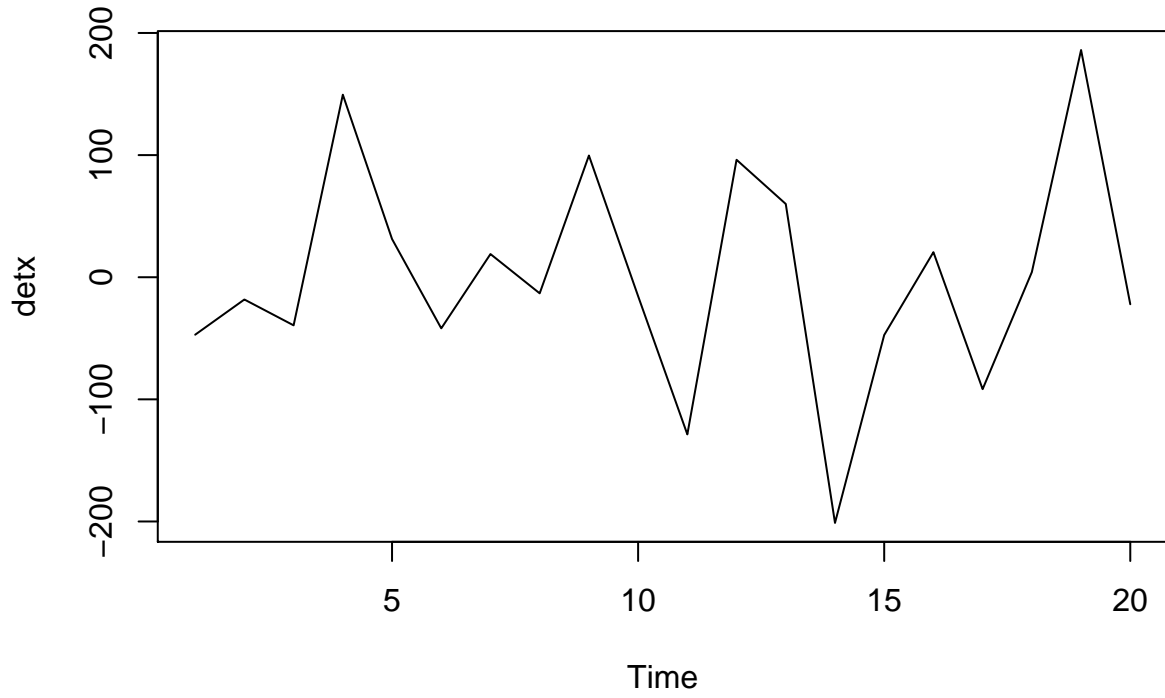
```
##  
## Call:
```

```
## lm(formula = x2 ~ I(1:20))
##
## Coefficients:
## (Intercept)      I(1:20)
##      -28.09      101.16
```

```
lin = lm(x2~I(1:20))
detx = resid(lin)
ts.plot(x2); abline(lin,col=2)
```



```
ts.plot(detx)
```



```
acf(detx)
```

Series detx

