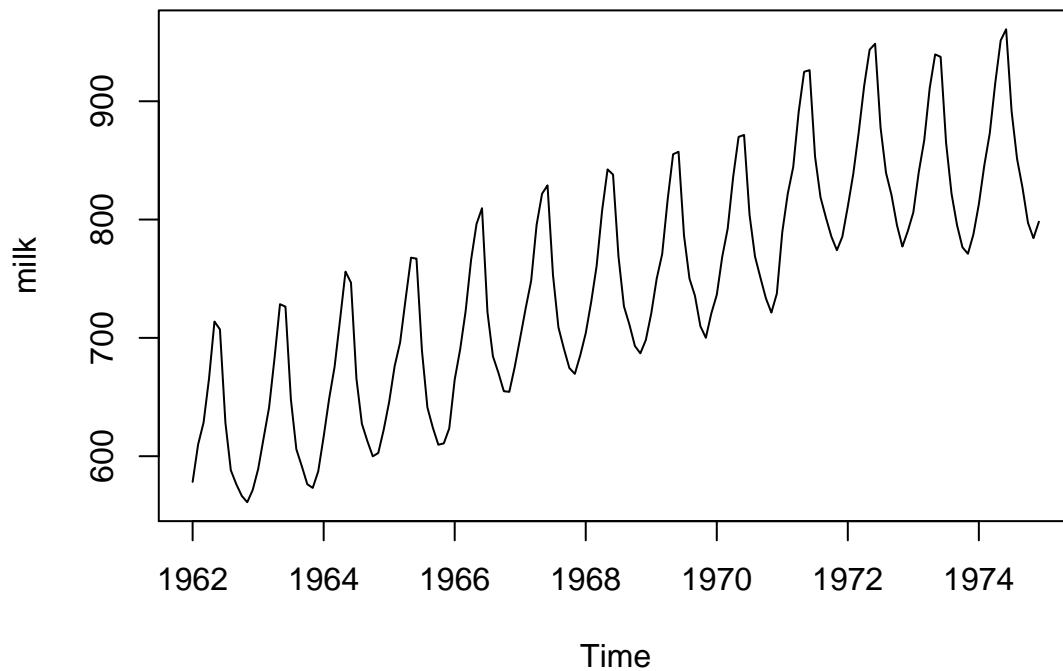


Lab Assignment 5

PSTAT 174/274

1. We will analyze monthly milk production measured in pounds per from Jan. 1962 to Dec. 1975 from the package `tsdl` as Lab 4 (if you want to re-install `tsdl`, please refer to Lab 4). Let's denote the time series `milk` as X_t .

```
library(tsdl)
milk <- subset(tsdl, 12, "Agriculture")[[3]]
plot(milk)
```



```
# To make it more stationary, we use the following code:
dmilk <- diff(milk, 12)
ddmilk <- diff(dmilk, 1)
```

- (a) Explain why the series `milk` looks not stationary.
- (b) Let Y_t be the series `ddmilk`, that is, $Y_t = (1 - B)(1 - B^{12})X_t$. Plot the ACF and PACF of Y_t with `lag.max = 50`.
- (c) Now, we assume that Y_t corresponds to a SARIMA model. Determine possible candidate models $\text{SARIMA}(p, d, q) \times (P, D, Q)_s$ for the series Y_t .
- (d) Choose one model for this data set, and write down your fitted model.