HWA1

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HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = 0 # MA(1) parameter
theta_2       = 0    # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1    # variance of noise term

# set seed for random number generation
set.seed(960231)
```

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```
# Simulate MA(2) - using built in arima.sim()
y_MA <- arima.sim(model = list(ma = c(theta_1, theta_2)), n = NumObsSim, sd = sqrt(sigma2))
```

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```
############
# Time series plot, ACF and PACF in one
layout(matrix(c(1, 1, 1, 1,
                2, 2, 3, 3), nrow=2, byrow=TRUE))

ts.plot(y_MA[1:numObsToPlot], ylab = "Y", main = "Time series plot of MA")
acf(y_MA[1:NumObsSim], lag.max = ACFLagstoPlot,
    type = "correlation", plot = T, main = "ACF of MA",
    xlim=c(1,ACFLagstoPlot))
acf(y_MA[1:NumObsSim], lag.max = ACFLagstoPlot, type = "partial", plot = T, main = "PACF of MA")
par(mfrow = c(1,1)) # resets to default

# values can be accessed in the following manner
acf(y_MA[1:NumObsSim], lag.max = ACFLagstoPlot, type = "correlation", plot = F)
acf(y_MA[1:NumObsSim], lag.max = ACFLagstoPlot, type = "partial", plot = F)
```

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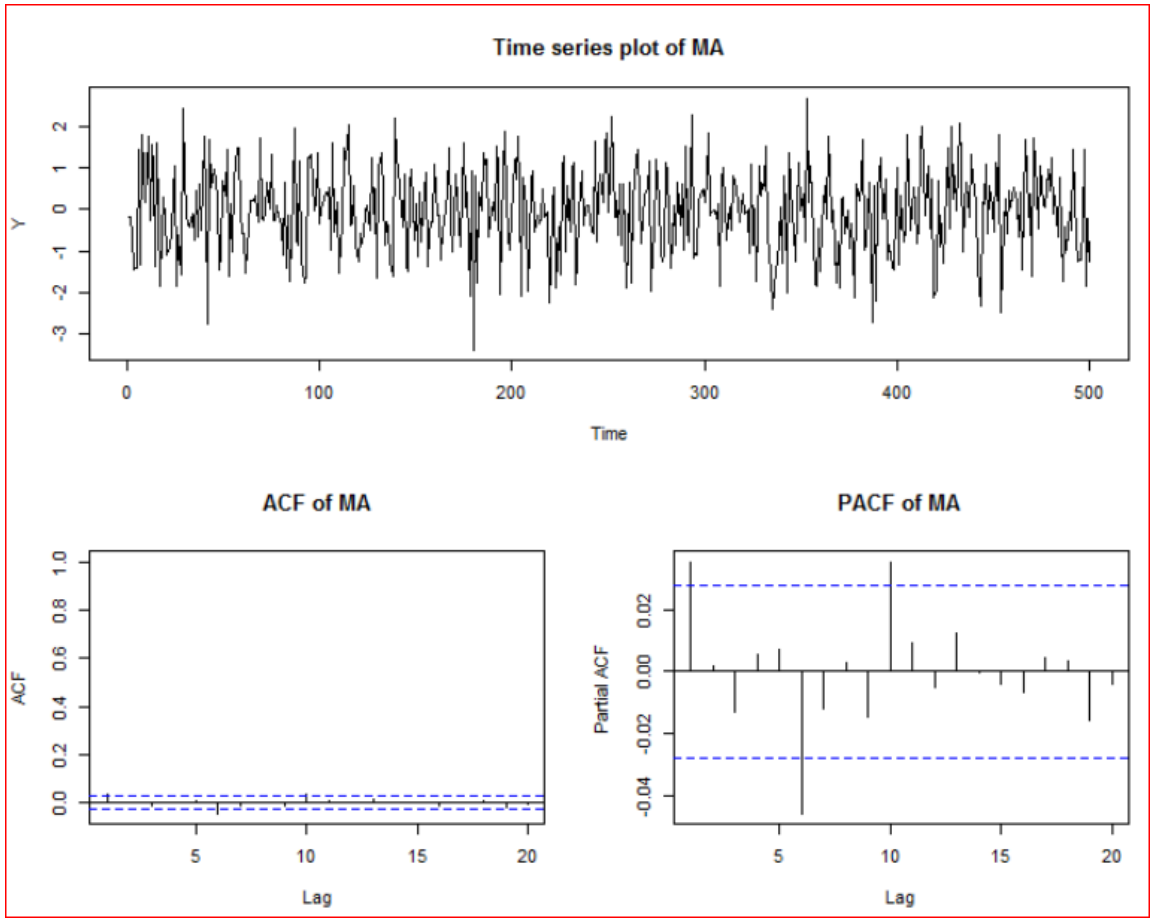
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = 0.7  # MA(1) parameter
theta_2       = 0    # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1    # variance of noise term
```

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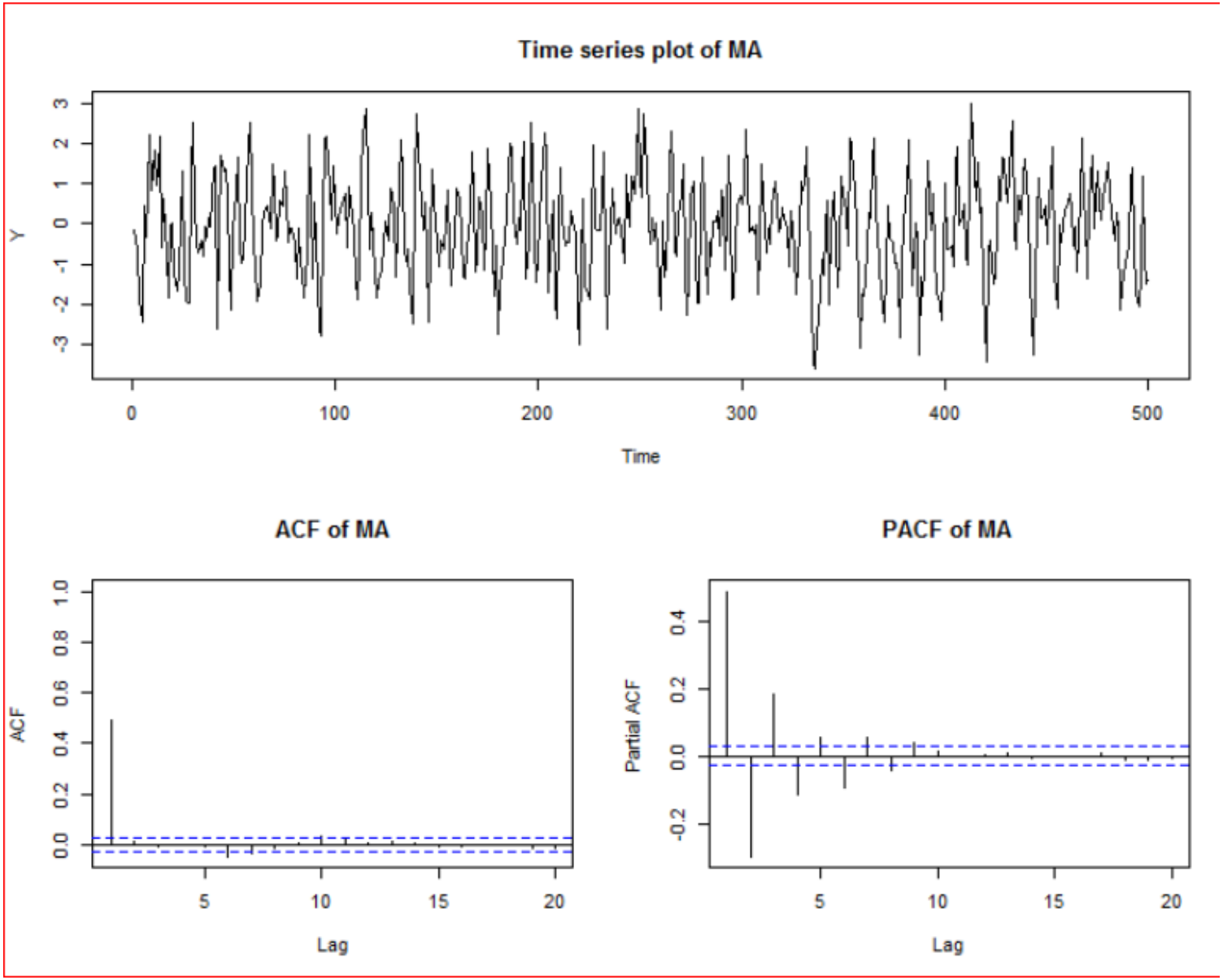
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = -0.7  # MA(1) parameter
theta_2       = 0     # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1     # variance of noise term
```

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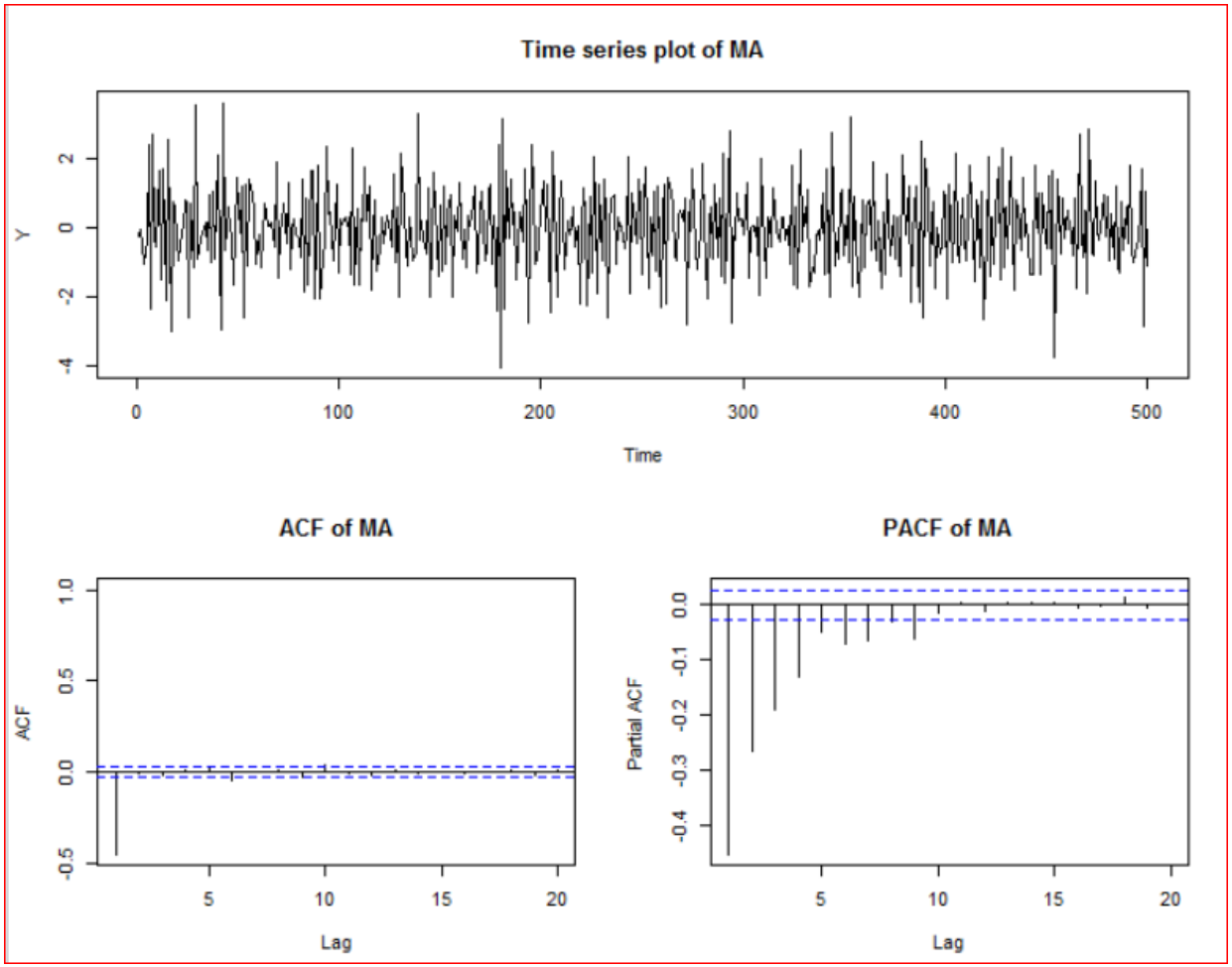
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = 0.5  # MA(1) parameter
theta_2       = 0    # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1    # variance of noise term
```

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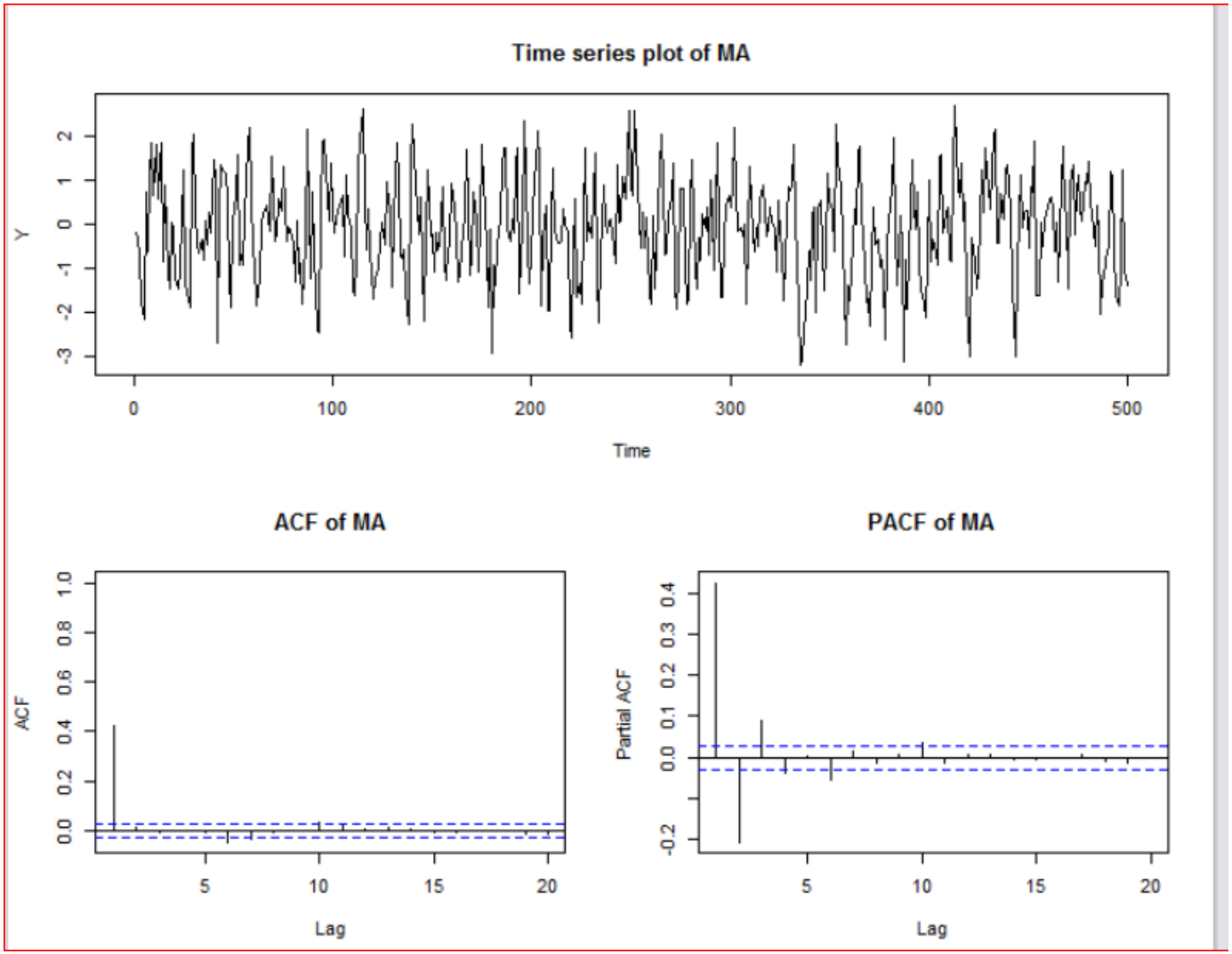
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = 2  # MA(1) parameter
theta_2       = 0    # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1    # variance of noise term
```

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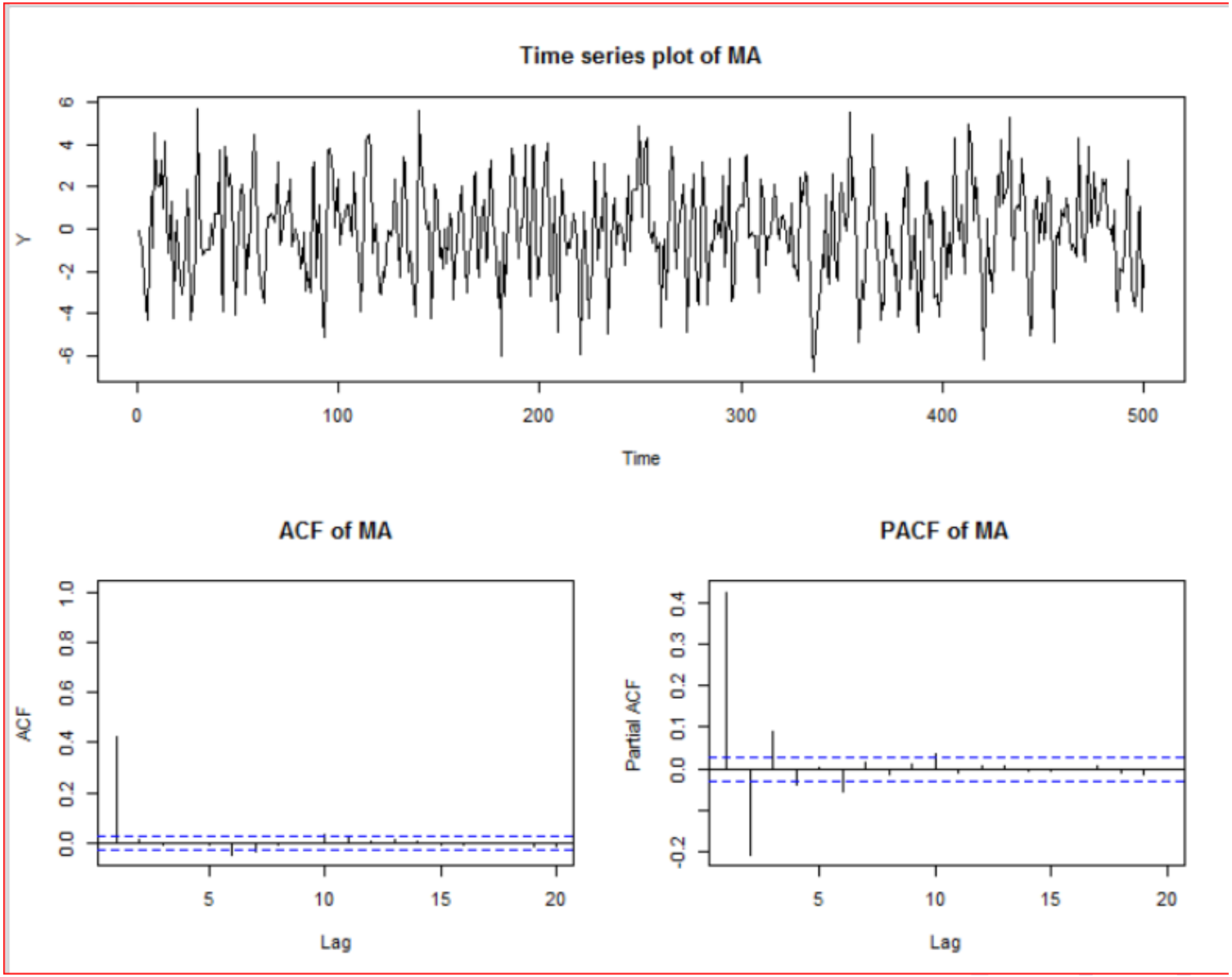
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

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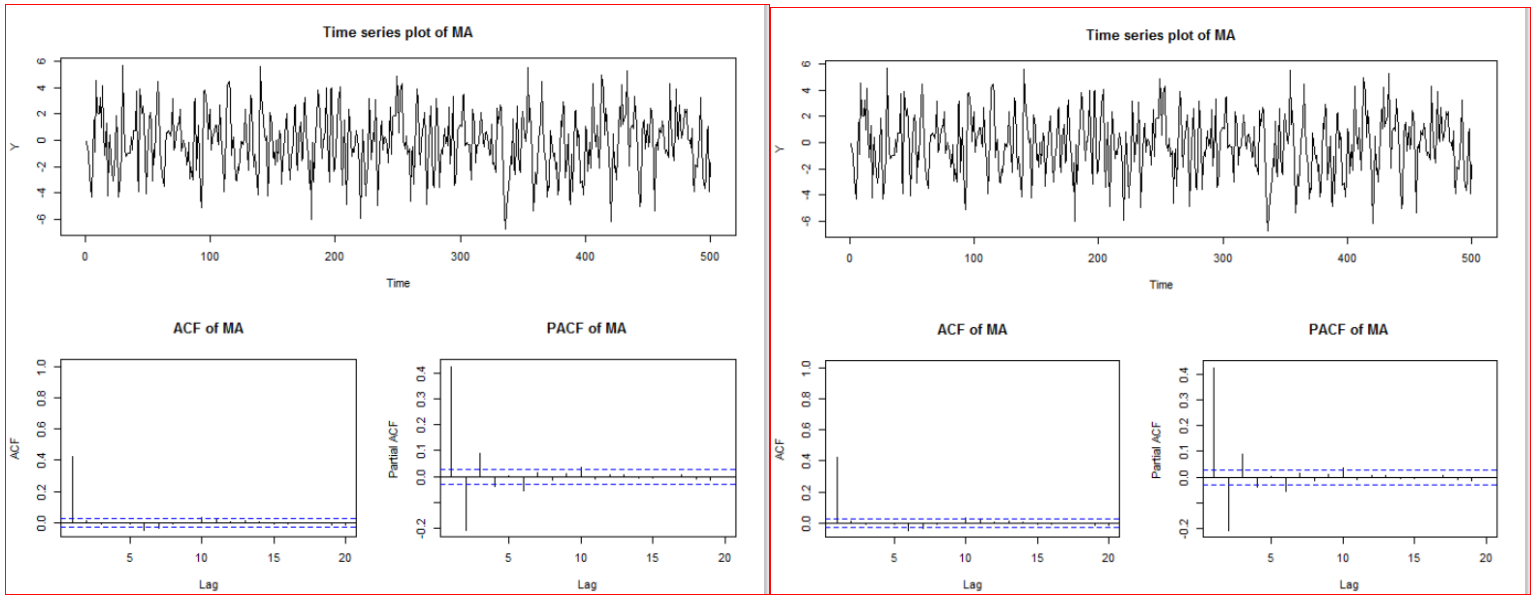
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

HWA1

```
# simulate MA(2) process
# Parameter values and settings
theta_1       = 0.4  # MA(1) parameter
theta_2       = 0.3    # MA(2) parameter
NumObsSim     = 5000 # Simulated Sample size
numObsToPlot  = 500
ACFLagstoPlot= 20
sigma2        = 1    # variance of noise term
```

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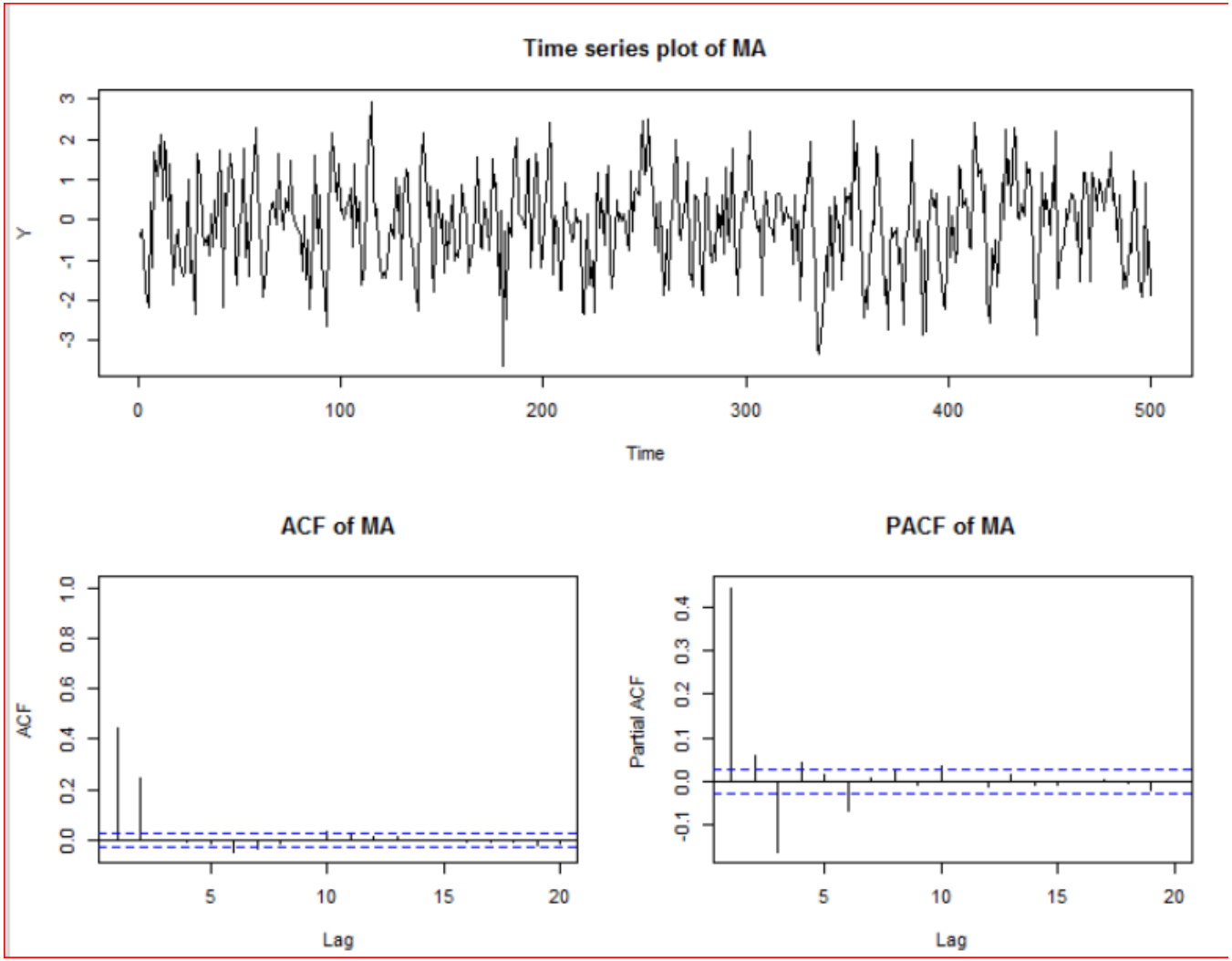
Time series plot of MA
Y
Time
ACF of MA
ACF
Lag
PACF of MA
Partial ACF
Lag

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