

# HW2

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## Question 1

```
#install.packages("pracma")  
library(pracma)
```

```
A = cbind(c(1,0,-1,2),c(1,2,2,0),c(2,4,4,0))  
rref(A)
```

```
##      [,1] [,2] [,3]  
## [1,]    1    0    0  
## [2,]    0    1    2  
## [3,]    0    0    0  
## [4,]    0    0    0
```

```
B = cbind(c(1,2,2,0),c(2,4,4,0),c(1,0,-1,2))  
rref(B)
```

```
##      [,1] [,2] [,3]  
## [1,]    1    2    0  
## [2,]    0    0    1  
## [3,]    0    0    0  
## [4,]    0    0    0
```

## Question 3

```
library(faraway)
```

```
##  
## Attaching package: 'faraway'  
## The following object is masked from 'package:pracma':  
##  
##      logit
```

```
# Fit the model of theft against age  
lm1 <- lm(chredlin$theft~chredlin$age)  
# Show the result  
lm1
```

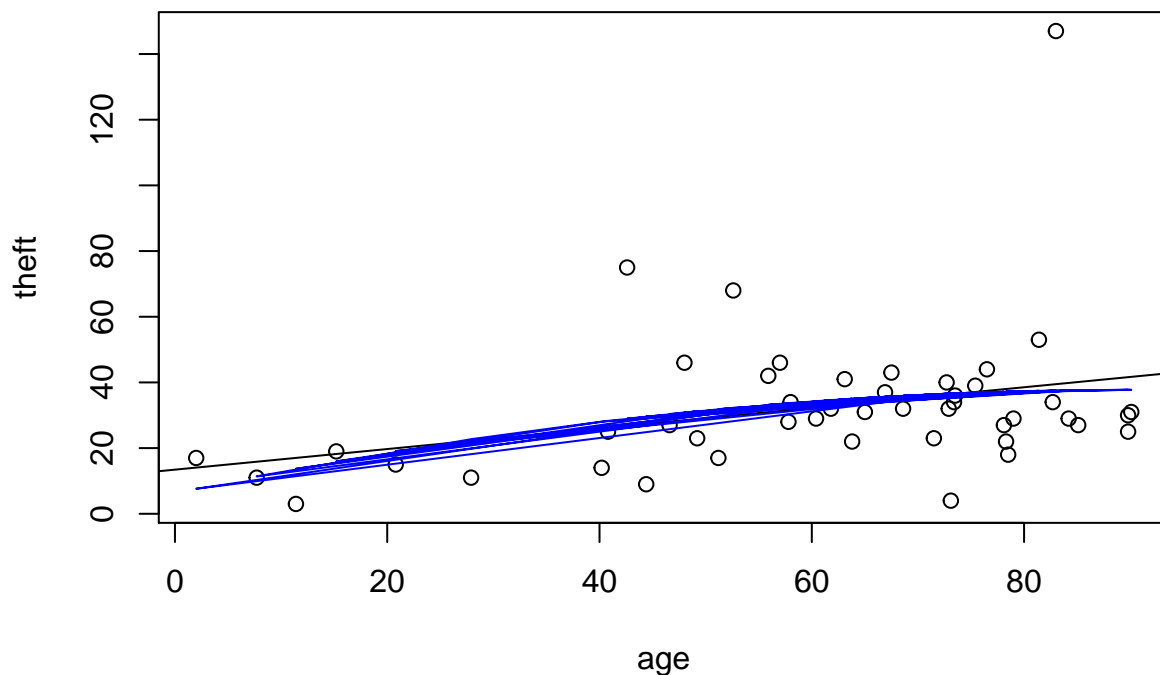
```
##  
## Call:  
## lm(formula = chredlin$theft ~ chredlin$age)  
##  
## Coefficients:
```

```
## (Intercept) chredlin$age
##      13.4408      0.3136

# Fit the model of theft against age and age^2
lm2 <- lm(chredlin$theft~chredlin$age + I(chredlin$age^2))
# Show the result
lm2

##
## Call:
## lm(formula = chredlin$theft ~ chredlin$age + I(chredlin$age^2))
##
## Coefficients:
##      (Intercept)      chredlin$age  I(chredlin$age^2)
##      6.247810      0.698292      -0.003869

# Make the scatter plot
plot(chredlin$theft~chredlin$age, xlab = "age", ylab = "theft")
# Plot the model 1
abline(lm1)
# Plot the model 2
points(chredlin$age, lm2$fitted, type = "l", col = "blue")
```



## Question 4

```
# Fit the model of theft against age and 2age
lm3 <- lm(chredlin$theft~chredlin$age + I(2*chredlin$age))
# Show the result
lm3

##
## Call:
## lm(formula = chredlin$theft ~ chredlin$age + I(2 * chredlin$age))
```

```
##
## Coefficients:
##      (Intercept)      chredlin$age  I(2 * chredlin$age)
##      13.4408      0.3136      NA
# Make the scatter plot
plot(chredlin$theft~chredlin$age, xlab = "age", ylab = "theft")
# Plot the model 1
abline(lm1)
# Plot the model 3
points(chredlin$age, lm3$fitted, type = "l", col = "red")
```

