

```

# R doce for ex 1.28 p37
crime=read.table("C:/Users/Mihinda/Desktop/CH01PR28.txt",
header=0) #the data file
y <- crime[,1]
x <- crime[,2]
par(mfrow=c(3,1))
plot(x, y)
fit = lm(y ~x)
summary(fit)
yhat = predict.lm(fit)
lines(x,yhat)
anova(fit)
plot(fitted(fit),residuals(fit))
qqnorm(residuals(fit))
#prdicting EY at a given value x0
x0 <- data.frame(x=74)
predict(fit, x0)
#CI for the mean of Y at x=x0
predict(fit, x0, interval="confidence", level=0.95)
# prediction interval for a new Y at x = x0
predict(fit, x0, interval="prediction", level=0.95)
#Bonferroni simultaneous PI at k given points
x0 <- data.frame(x=c(75, 80))
k <- dim(x0)[1]
alpha <- 0.05
predict(fit, x0, interval="prediction", level=1-alpha/k)

```

```

> # R doce for ex 1.28 p37
> crime=read.table("C:/Users/Mihinda/Desktop/CH01PR28.txt",
header=0) #the data file
> y <- crime[,1]
> x <- crime[,2]
> par(mfrow=c(3,1))
> plot(x, y)
> fit = lm(y ~x)
> summary(fit)

```

Call:

```
lm(formula = y ~ x)
```

Residuals:

	Min	1Q	Median	3Q	Max
	-5278.3	-1757.5	-210.5	1575.3	6803.3

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	20517.60	3277.64	6.260	1.67e-08 ***
x	-170.58	41.57	-4.103	9.57e-05 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2356 on 82 degrees of freedom

Multiple R-squared: 0.1703, Adjusted R-squared: 0.1602

F-statistic: 16.83 on 1 and 82 DF, p-value: 9.571e-05

```
> yhat = predict.lm(fit)
```

```
> lines(x,yhat)
```

```
> anova(fit)
```

Analysis of Variance Table

Response: y

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
x	1	93462942	93462942	16.834	9.571e-05 ***
Residuals	82	455273165	5552112		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```
> plot(fitted(fit),residuals(fit))
```

```
> qqnorm(residuals(fit))
```

```
> #predicting EY at a given value x0
```

```
> x0 <- data.frame(x=74)
```

```
> predict(fit, x0)
```

```
1
7895.036
```

```
> #CI for the mean of Y at x=x0
```

```
> predict(fit, x0, interval="confidence", level=0.95)
```

```
fit lwr upr
1 7895.036 7257.85 8532.222
```

```
> # prediction interval for a new Y at x = x0
```

```
> predict(fit, x0, interval="prediction", level=0.95)
```

```
fit lwr upr
1 7895.036 3164.511 12625.56
```

```
> #Bonferroni simultaneous PI at k given points
```

```
> x0 <- data.frame(x=c(75, 80))
```

```
> k <- dim(x0)[1]
```

```
> alpha <- 0.05
```

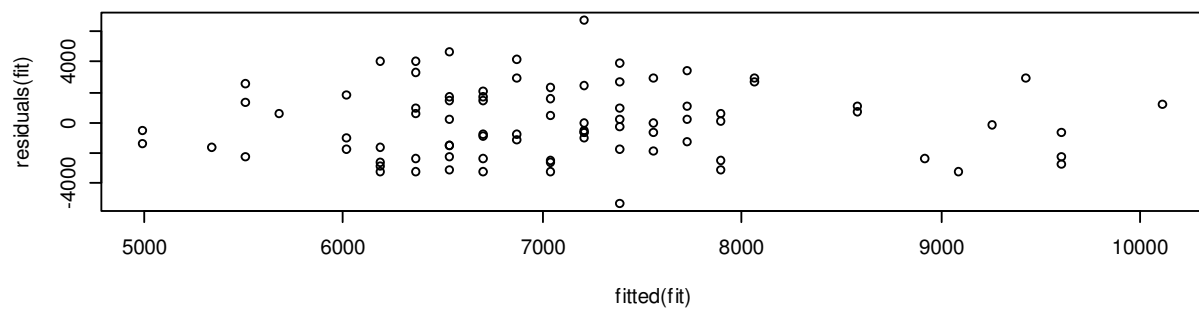
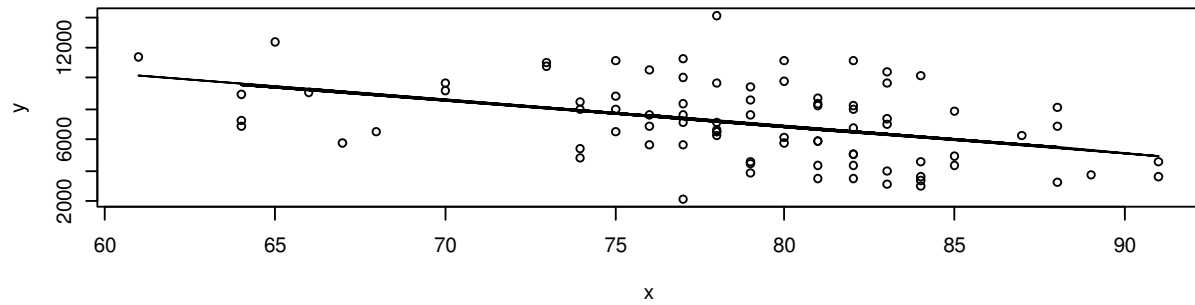
```
> predict(fit, x0, interval="prediction", level=1-alpha/k)
```

```
fit lwr upr
```

```

1 7724.461 2301.648 13147.27
2 6871.585 1457.879 12285.29

```



Normal Q-Q Plot

