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# R Code for HW3
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```
Sta108, Fall 2007, Utts
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```
# Problem 3.18
```

```
Data=read.table("CH03PR18.txt")
```

```
names(Data)=c("Y", "X")
```

```
 #(a)
```

```
plot(Data$X,Data$Y,main="Production Time", xlab="Production Lot  
Size",ylab="Production Time (Hours)",pch=19)
```

```
 #(b)
```

```
#transform Data: X'=sqrt(X)
```

```
Data=cbind(Data, sqrtX=sqrt(Data$X))
```

```
#fit new model with X'
```

```
Fit=lm(Y~sqrtX, data=Data)
```

```
summary(Fit)
```

```
 #(c)
```

```
#plot the estimated regression line
```

```
plot(Data$sqrtX,Data$Y,main="Transformed Plot of Production Time",  
xlab="Square-Root Production Lot Size",ylab="Production Time  
(Hours)",pch=19)
```

```
abline(Fit$coefficients[1], Fit$coefficients[2])
```

```
 #(d)
```

```
#print residuals and fitted values to the screen
```

```
cbind(ei=Fit$residuals, Yhat=Fit$fitted.values)
```

```
#plot Residuals vs. Fitted Values
```

```
plot(Fit$fitted.values, Fit$residuals, main="Residuals vs. Fitted Values",  
xlab="Fitted Values",ylab="Residuals",pch=19)
```

```
abline(h=0)
```

```
#Normal Probability Plot
```

```
qqnorm(Fit$residuals, main="Normal Probability Plot")
```

```
qqline(Fit$residuals)
```

```
#Height-Weight Data
```

```
Data = read.table("wtheightm.txt", header=TRUE)
```

```
#fit the Full and Reduced regression models
```

```
Reduced = lm(Weight ~ Height, data=Data)
```

```
Full = lm(Weight ~ 0 + as.factor(Height), data = Data)
```

```
anova(Reduced, Full)
```