Lab 5.3

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5.3.1

```
## Warning: package 'ISLR2' was built under R version 4.3.2
```

```
## [1] 23.26601
```

```
## [1] 18.71646
```

```
## [1] 18.79401
```

```
## [1] 25.72651
```

```
## [1] 20.43036
```

```
## [1] 20.38533
```

5.3.2

```
## (Intercept)  horsepower
##  39.9358610  -0.1578447
```

```
## (Intercept)  horsepower
##  39.9358610  -0.1578447
```

```
## [1] 24.23151 24.23114
```

```
##  [1] 24.23151 19.24821 19.33498 19.42443 19.03321 18.97864 18.83305 18.96115
##  [9] 19.06863 19.49093
```

5.3.3

```
##  [1] 24.27207 19.26909 19.34805 19.29496 19.03198 18.89781 19.12061 19.14666
##  [9] 18.87013 20.95520
```

5.3.4

```
## [1] 0.5758321
```

```
## [1] 0.5385326
```

```
##
## ORDINARY NONPARAMETRIC BOOTSTRAP
##
##
## Call:
## boot(data = Portfolio, statistic = alpha.fn, R = 1000)
##
##
## Bootstrap Statistics :
##      original       bias    std. error
## t1* 0.5758321 0.0007959475  0.08969074
```

```
## (Intercept)  horsepower
##  39.9358610  -0.1578447
```

```
## (Intercept)  horsepower
##  40.3404517  -0.1634868
```

```
## (Intercept)  horsepower
##  40.1186906  -0.1577063
```

```
##
## ORDINARY NONPARAMETRIC BOOTSTRAP
##
##
## Call:
## boot(data = Auto, statistic = boot.fn, R = 1000)
##
##
## Bootstrap Statistics :
##       original        bias    std. error
## t1* 39.9358610  0.0544513229 0.841289790
## t2* -0.1578447 -0.0006170901 0.007343073
```

```
##               Estimate  Std. Error   t value      Pr(>|t|)
## (Intercept) 39.9358610 0.717498656  55.65984 1.220362e-187
## horsepower  -0.1578447 0.006445501 -24.48914  7.031989e-81
```

```
##
## ORDINARY NONPARAMETRIC BOOTSTRAP
##
##
## Call:
## boot(data = Auto, statistic = boot.fn, R = 1000)
##
##
```

```
## Bootstrap Statistics :
##         original        bias     std. error
## t1* 56.900099702  3.511640e-02 2.0300222526
## t2* -0.466189630 -7.080834e-04 0.0324241984
## t3*  0.001230536  2.840324e-06 0.0001172164
```

```
##                     Estimate   Std. Error   t value      Pr(>|t|)
## (Intercept)     56.900099702 1.8004268063  31.60367 1.740911e-109
## horsepower      -0.466189630 0.0311246171 -14.97816  2.289429e-40
## I(horsepower^2)  0.001230536 0.0001220759  10.08009  2.196340e-21
```