HW11.12

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Problem 1

```
my_vector <- c(24, 17, 26, 33, 21, 38, 24, 13, 41, 17,
               15, 19, 12, 29, 19, 24, 31, 15)

sample_mean <- mean(my_vector)
sample_sd <- sd(my_vector)

conf_level <- qt(0.995, 17)

conf_level*(sample_mean/sqrt(18))
```

```
[1] 15.86355
```

```
mu <- conf_level*(sample_mean/sqrt(18))

sample_mean - mu
```

```
[1] 7.35867
```

```
sample_mean + mu
```

```
[1] 39.08577
```

Problem 2

```
mean_hp <- mean(mtcars$hp)
sd_hp <- 1.2

Conflvl_hp <- qt(0.975, 31)

Conflvl_hp * (sd_hp/sqrt(32))
```

```
[1] 0.4326461
```

```
mu = Conflvl_hp * (sd_hp/sqrt(32))

mean_hp
```

```
[1] 146.6875
```

```
mean_hp - mu
```

```
[1] 146.2549
```

```
mean_hp + mu
```

```
[1] 147.1201
```

Problem 3

In a random sample of 32 chocolate bars, the mean calorie count is 204.0 and the standard deviation is 12.8. Compute a level 95% confidence interval for the population mean.

```
conf_level <- qt(0.975, 31)

mean_chocbar <- 204
sd_chocbar <- 12.8

conf_level * (sd_chocbar/sqrt(32))
```

```
[1] 4.614892
```

```
mu = conf_level * (sd_chocbar/sqrt(32))

mean_chocbar
```

```
[1] 204
```

```
mean_chocbar + mu
```

```
[1] 208.6149
```

```
mean_chocbar - mu
```

```
[1] 199.3851
```