

HW #1

1.2, 1.6, 1.11, 1.12, 1.16, 1.18, 1.26, 1.27

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2.3

False

2.6

2.7

The p -value for the hypothesis that the mean difference is zero must be less than 0.05.

2.13

First I separated the dataset into fish oil and regular oil treatments:

```
fishoil <- ex0112 %>%  
  filter(Diet == "FishOil")  
regoil <- ex0112 %>%  
  filter(Diet == "RegularOil")
```

Computing the sample averages and standard deviations:

```
oilcomp <- tibble(  
  Diet = c("Fish Oil", "Regular Oil"),  
  n = c(length(fishoil$BP), length(regoil$BP)),  
  `Sample average` = c(mean(fishoil$BP), mean(regoil$BP)),  
  `Sample stdev` = c(sd(fishoil$BP), sd(regoil$BP))  
)  
  
oilcomp %>%  
  kbl(booktabs = TRUE, digits = 2, position = "h") %>%  
  kable_styling()
```

Diet	n	Sample average	Sample stdev
Fish Oil	7	6.57	5.86
Regular Oil	7	-1.14	3.18

The pooled standard deviation is given by:

$$\sqrt{\frac{(7-1) * 5.86 + (7-1) * 3.18}{7+7-2}},$$

which is equal to 2.13, and the pooled standard error of the difference in means is $2.13 * \sqrt{\frac{1}{7} + \frac{1}{7}}$, which equals 1.14. There are $7 + 7 - 2 = 12$ degrees of freedom associated with this estimate, and the 97.5th percentile of a t -distribution with 12 degrees of freedom is 2.18.

2.18

2.22