Homework 2A

STAT 242: Intermediate Statistics

The code below loads packages and makes it so that enough digits are printed that you won't get confused by rounding errors. Insert a new R chunk into your homework, near the top, and copy and paste this code within.

Problem 1

A study comparing four different methods of virtual training for launching a lifeboat was run to assess the effectiveness of the different methods[1]: lecture, a monitor and keyboard/mouse, a head-mounted display (HMD) and joypad, and an HMD and wearable sensors. Before and after training, the participants' procedural knowledge and technical skill on a real lifeboat was evaluated on a real lifeboat.

Conduct a full analysis to see if any of the mean procedural knowledge gains are different. Your analysis should include:

- an appropriate plot with informative axis labels (check out the xlab() and ylab() functions for `ggplot2`)–5 points;
- a hypothesis test–10 points.

Interpret all of your results in context. Explain how to interpret the p-value for the test and the conclusions that can be drawn from it as though to someone who had not taken a statistics class. What conclusions can be drawn about the virtual training programs?

```
virtual_training <- read.csv("http://users.stat.ufl.edu/~winner/data/virtual_training.csv")
virtual_training$grp.trt <- as.factor(virtual_training$grp.trt)
```

[1]Source: J.Jung and Y.J. Ahn (2018). "Effects of Interface on Procedural Skill Transfer in Virtual Training: Lifeboat Launching Operation Study," Computer Animation & Virtual Worlds, Vol. 29, pp. e1812. https://doi.org/10.1002/cav.1812