

**MATH-57091 Probability and Statistics for High-School  
Teachers.**

**Home Work 9, due on Wednesday November 14,  
Instructor: Prof. Artem Zvavitch**

**Problem 1.** *Twelve successively tested lightbulbs functioned for the following lengths of time (measured in hours):*

35.6, 39.2, 18.4, 42.0, 45.3, 34.5, 27.9, 24.4, 19.9, 40.1, 37.2, 32.9.

- *Give a 95 percent confidence interval estimate of the mean life of a lightbulb.*
- *A claim has been made that the results of this experiment indicate that "One can be 99 percent certain that the mean life exceeds 30 hours". Do you agree with this claim?*

**Problem 2.** *To convince a potential buyer of the worth of her company, an executive had ordered a survey of the daily cash receipts of the business. A sample of 14 days revealed the following values (in 100 of dollars):*

33, 12, 48, 40, 26, 17, 29, 38, 34, 41, 25, 51, 49, 34.

*If the executive wants to present these data in the most favorable way, should she present a confidence interval estimate of a one-sided confidence bound? If one-sided should it be an upper or lower bound? If you were the executive, how would you complete the following "I am 95 percent confident that ..."*

**Problem 3.** *A random sample of 500 Californian voters indicated that 302 are in favor of the death penalty. Construct a 99 percent confidence interval estimate of the proportion of all Californian voters in favor of the death penalty.*