

## Stat 482 Homework Set #3

Refer to the data from Exercise 1.20

Data has been collected on 45 calls for routine maintenance. The goal is to explore the relationship between the number of copiers serviced ( $x$ ) and the time in minutes spent to complete the service ( $y$ ). Let  $x_h = 3$  copiers.

1. Compute a confidence interval for  $\mu_h$ .
  2. Compute a prediction interval for  $Y_{h(new)}$ .
  3. Explain the difference between a confidence interval and a prediction interval, stated in the context of the problem.
  4. Let  $m = 10$ . Compute a prediction interval for  $\bar{Y}_{h(new)}$ .
  5. Provide an interpretation of your result, stated in the context of the problem.
  6. Show that  $Var(pred.mean)$  converges to  $Var(\hat{Y}_h)$  as  $m \rightarrow \infty$ .
- Use this limit result to interpret the confidence interval for  $\mu_h$  as a prediction.