

STA362: Probability & Statistics II

Hand-in Homework #6

Due date: Thursday Dec 6th in class

Temperature readings were taken at various depths in Acton Lake at Hueston Woods State Park. Here are the sample measurements:

$x = \text{depth}$ (meters)	$y = \text{temperature}$ (Deg C)
0	29.2
1	29.3
2	28.3
3	26.9
4	25.1
5	25.2
6	24.8
7	22.7
8	21.0
9	20.3
10	19.4

Answer the following questions. Be sure to show all your work.

- Estimate the linear regression line.
- Provide a written interpretation of the values of the slope and y-intercept estimates solely within the physical context of this example.
- Find and fully interpret a 95% confidence interval for β .
- Find and fully interpret both:
 - a 95% confidence interval for the true mean temperature at a depth of 20 feet (hint: you'll have to convert feet to meters)
 - a 95% prediction interval for an individual temperature measurement made at a depth of 20 feet.
- Why might it not be a good idea to use your regression equation to estimate the true mean temperature at a depth of 20 meters?