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**Readings**

Reading Check due  
May 03, 2016 at 17:00  
UTC

**Lecture Videos**

Comprehension Check  
due May 03, 2016 at  
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**Lab**

Week 2: Hypothesis Testing (One Group Means) &gt; Problem Set &gt; Question 3



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## Question 3


An industrial plant dumps its waste into a nearby river, but claims that it is not impacting the native species of frogs that live in the river. The frogs are able to tolerate calcium concentrations **up to 91 mg/L**.

You measure the concentration of calcium in 25 random samples from the river. Your measurements are approximately normally distributed, with a **mean of 93.6 mg/L**, with a standard deviation of **7.8 mg/L**.


(1/1 point)

3a. What is the appropriate **alternative hypothesis** if the industrial plant's runoff is believed to be producing higher calcium concentrations than are deemed acceptable for the frogs? *Let  $\mu$  represent the true calcium concentration in the river downstream from the plant.*

☐  $\mu = 91$ ☐  $\mu \neq 91$ ☐  $\mu < 91$ ☒  $\mu > 91$  *You have used 1 of 1 submissions*

Lab due May 03, 2016  
at 17:00 UTC 

**Problem Set**

Problem Set due May  
03, 2016 at 17:00 UTC 

(1/1 point)

3b. Calculate the **test statistic**. (Round to 2 decimal places.)

✓ Answer: 1.67

1.67

You have used 1 of 1 submissions

(1/1 point)

3c. What is the **t-critical** value? Assume an alpha level of .05. (Round to 3 decimal places.)

✓ Answer: 1.711

1.711

You have used 1 of 1 submissions

(1/1 point)

3d. Does your data provide sufficient evidence to suggest that the calcium concentration in the river is **more than** 91 mg/L?

☐ Yes

☒ No ✓

You have used 1 of 1 submissions

(1/1 point)

3e. Suppose as part of a broader investigation into the plant's impact on the river's ecosystem, an environmental group conducted a large-scale study and found that the actual mean calcium concentration level downstream from the plant is 95 mg/L. Did you make an error in your hypothesis test, and if so, what type was it?

☐ Yes, a Type I Error

☒ Yes, a Type II Error ✓

☐ No error was made

*You have used 1 of 1 submissions*

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