**NAME:**

## Stat 205 Quiz 5

As part of a study of the treatment of anemia in cattle, researchers measured the concentration of selenium in the blood of $n = 36$ cows who had been given a daily selenium supplement. The mean selenium concentration was 6.21 $\mu$g/dL and the standard deviation was 1.84 $\mu$g/dL. As discussed in class, construct *and interpret* a 95% confidence interval for the population mean.

**ANSWER**:

We have $\bar{y} = 6.21$ and $s = 1.84$. The degrees of freedom for $t_{0.025}$ is $df = n - 1 = 35$. Let's follow the CI recipe card:

- In the back of the book, for $df = 30$ I find $t_{0.025} = 2.042$. You could use $df = 40$ too giving $t_{0.025} = 2.021$.
- The se$(\bar{y})$ is
$$\text{se}(\bar{y}) = \frac{s}{\sqrt{n}} = \frac{1.84}{\sqrt{36}} = 0.307.$$
- The 95% CI is given by
$$\bar{y} \pm t_{0.025} \;\; se(\bar{y}) = 6.21 \pm 2.042(0.307) = (5.58, 6.84).$$
- Interpretation: "With 95% confidence, the true mean selenium concentration is between 5.58 and 6.84 $\mu$g/dL among cattle given the supplement."