

Math 107. Homework #8. Solutions.

9.20  $6135 < \mu < 6465$ .

9.26  $E \sim 15.25$ .

9.28  $14.97 < \mu < 17.23$ .

9.30  $\bar{x} = 14.3, s \sim 0.0365$ .

Thus, the maximum error is  $E = 5.841 \cdot \frac{0.0365}{\sqrt{4}} \sim 0.107$ .

10.12 1. **Hypotheses:**  $H_0 : \mu = 425; H_A : \mu > 425$ .

2. **Level of significance:**  $\alpha = 0.05$

3. **Criterion:**

Reject  $H_0$  if  $\frac{\bar{x} - 425}{\sigma/\sqrt{n}} > 1.645$ , otherwise reserve judgement.

4. **Calculations:**  $\frac{455 - 425}{44/\sqrt{45}} \sim 4.57 > 1.645$

5. **Decision:** Reject the null hypotheses.

10.14 (a)  $\alpha = 0.05$ .

1. **Hypotheses:**  $H_0 : \mu = 15.0; H_A : \mu > 15.0$ .

2. **Level of significance:**  $\alpha = 0.05$

3. **Criterion:**

Reject  $H_0$  if  $\frac{\bar{x} - 15}{\sigma/\sqrt{n}} > 1.645$ , otherwise reserve judgement.

4. **Calculations:**  $\frac{15.4 - 15.0}{2.4/\sqrt{150}} \sim 2.04 > 1.645$

5. **Decision:** Reject the null hypothesis.

(b)  $\alpha = 0.01$ .

1. **Hypotheses:**  $H_0 : \mu = 15.0; H_A : \mu > 15.0$ .

2. **Level of significance:**  $\alpha = 0.01$

3. **Criterion:**

Reject  $H_0$  if  $\frac{\bar{x} - 15.0}{\sigma/\sqrt{n}} > 2.33$ , otherwise reserve judgement.

4. **Calculations:**  $\frac{15.4 - 15.0}{2.4/\sqrt{150}} \sim 2.04 < 2.33$

5. **Decision:** Not enough evidence to reject the null hypothesis.