

Section 8.3

Testing Claims about a Population Mean (σ = pop. std. dev. is known).

Parameter: Population Mean

Hypotheses: $H_0: \mu = 200$ * $H_1: \mu > 200$ ↗ right tail test

Gather: $\bar{X} = 289.8$, $n = 45$, $\alpha = .05$, $\sigma = 141.5$

Requirement: $n > 30$ ✓

Test Statistic: TS $z = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}} = \frac{289.8 - 200}{141.5 / \sqrt{45}} = 4.26$
↑ z because σ is known ↖ get μ from H_0 statistically significant

Critical Value:

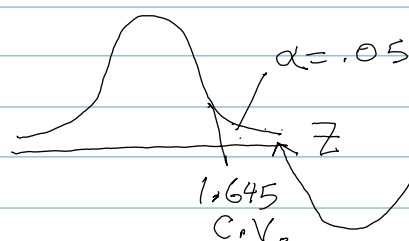


Table A2
 $\alpha = .05$
 one tail
 ↓
 Large $|z| \rightarrow 1.645$

P-value:

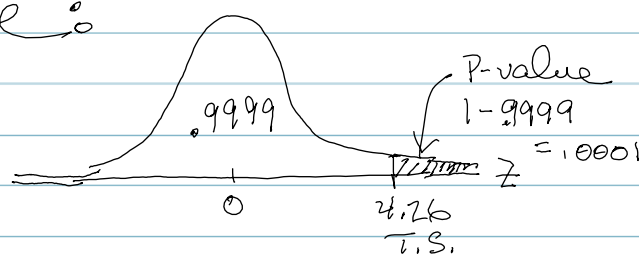


Table A1
 $z \rightarrow .06$
 ↓
 $4.2 \rightarrow .9999$

$p\text{-value} = .0001$ Highly significant.

Conclusion: $p\text{val} = .0001 < .05 = \alpha$
 Reject H_0 & Support H_1 .

The data support the claim that the mean magnetic intensity for monarchs is greater than 200 pico-emus.