

Exam III Solutions

Part 1: Multiple Choice

Total Points: 68 (4 points per question)

TEST A

1. B
2. D
3. C
4. B
5. C
6. B
7. B
8. A
9. B
10. E
11. B
12. B
13. B
14. A
15. B
16. B
17. D

TEST B

1. B
2. B
3. D
4. B
5. B
6. A
7. D
8. E
9. B
10. B
11. B
12. A
13. B
14. C
15. B
16. D
17. C

Part 2: Written Section

Total Points: 32

1

(A) $\hat{p} \pm Z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = .59 \pm 1.96 \sqrt{\frac{.59(.41)}{174}} = .59 \pm 1.96(.05) = .59 \pm .098 = (.50, .69)$

(B) $H_o : p = .65$ vs. $H_a : p \neq .65$

(C) $\alpha = 1 - C = 1 - .95 = .05$

(D) Fail to reject H_o because .65 is in the 95% confidence interval (.50, .69)

(E) Americans and Canadians have the same proportion of people that own cars (65%).

2

(A) $H_o : \mu_1 = \mu_2$ vs. $H_a : \mu_1 > \mu_2$ (assuming 1=girls involved in sports and 2=girls not involved in sports)

$$(B) Z = \frac{(X_1 - X_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} = Z = \frac{(3.01 - 2.85) - (0)}{\sqrt{\frac{.41^2}{30} + \frac{.29^2}{44}}} = .16 / .09 = 1.78$$

$$(C) Z \sim N(0, 1)$$

$$(D) p - value = P(Z > 1.78) = .0375$$

(E) Reject H_o because $p - value < \alpha$

(F) Girls involved in high school sports have higher GPAs than girls not involved in high school sports.