Math 373 Hw 15 Name _____ Score _____/ 15

Hw 302: 8.44, 8.46, 8.50. 308: 8.54. Rec. 302: 8.45, 8.47, 8.51. 308: 8.53.

Page 302.

8.44. Independent samples of $n_1 = 500$ and $n_2 = 500$ observations were selected from binomial populations 1 and 2, and $x_1 = 120$ and $x_2 = 147$ successes were observed.

(a) Estimate the difference $p_1 - p_2$ between the two population proportions.

_ . _ _ _ 9

(b) Estimate the standard error for the estimate.

. _ _ _ 10

(c) What is the margin of error for the estimate in (a)?

. _ _ _ 10

(d) The sample from the second population had a higher percentage of successes. Is this difference significant at the 95% confidence level? Explain why or why not?

8.46. Independent samples of $n_1 = 1265$ and $n_2 = 1688$ observations were selected from binomial populations 1 and 2, and $x_1 = 849$ and $x_2 = 910$ successes were observed.

(a) Find the 99% confidence interval for the difference $p_1 - p_2$ between the two population proportions.

[( ) ± ( )( )] = [. _ _ _ , . _ _] 14, 9

(b) The sample from the second population had a higher percentage of successes. Is this difference significant at the 99% confidence level?

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8.50. A sampling of political candidates — 200 from the West and 200 from the East — showed that 120 in the West had union backing while 142 in the East had union backing.

(a) Find the 95% confidence interval for the difference between the proportion of union backed candidates in the West and in the East.

[( ) ± ( )( )] = [_ . _ _ , _ . _ _ _] 2, 8

(b) The sample from the East had a higher percentage of union backing. Is this difference significant at the 95% confidence level? Explain why or why not?

Page 308. Write intervals in unsimplified and decimal form.

8.54(2) Find a 99% lower bound confidence interval for the proportion p when a random sample of $n = 400$ trials produced $x = 196$ successes. 2-digit check = 7

8.55′. Independent random samples of size 50 are drawn from two quantitative populations, producing the sample information in the table.

1.645	Sample 1	Sample 2
	50	50
Sample mean	12	10
Sample std. dev.	5	7

(a)(2) Find the 95% lower bound confidence interval for the difference in the two population means. Go to two significant decimal places (4 places), check = 3.

(b) The mean of the first sample is larger than the second. Is this fact statistically significant at the 95% confidence level? Explain why or why not?

(c) Is this fact statistically significant at the 99% confidence level?

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Know these *critical* values.

	$z_{\alpha/2}$	z_{α}
α=10%	**1.645**	**1.28**
α=5%	**1.96**	**1.645**
α=1%	**2.58**	**2.33**