

Solutions to Dr Sancetta's Past IIA Paper 6 Exercises.

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19. $\bar{x} \pm 1.96 \sqrt{\frac{\bar{x}(1-\bar{x})}{n}}$, $\bar{x} + 1.645 \sqrt{\frac{\bar{x}(1-\bar{x})}{n}}$

20. $\frac{(n-1)S^2}{\chi^2_{n-1, 0.975}}$ to $\frac{(n-1)S^2}{\chi^2_{n-1, 0.025}}$

21. $\frac{\text{var}(x_i)}{\text{var}(x'_i)} \frac{1}{F_{n-1, n-1, 0.975}}$ to $\frac{\text{var}(x_i)}{\text{var}(x'_i)} \frac{1}{F_{n-1, n-1, 0.025}}$

22. $\hat{\pi}_A - \hat{\pi}_B \pm 2.576 \sqrt{\frac{\hat{\pi}_A(1-\hat{\pi}_A)}{n_A} + \frac{\hat{\pi}_B(1-\hat{\pi}_B)}{n_B}}$

if machines not independent then $\sqrt{\quad}$ term becomes $\text{var}(\pi_A) + \text{var}(\pi_B) - 2\text{covar}(\pi_A, \pi_B)$.

23. $P_L e^{1.645\sigma/100}$ (? seems odd that σ^2 is independent of k)

24. Null is simple; alternative is composite

25. One tailed power = 0.36 ⁶⁴, two tailed power = 0.516
(I assume we choose type one error to be 0.05)

26. 1. simple 2. composite 3. simple 4. composite

27. 0.079

28. uh?!