Example Midterm #2 Problem Solutions

2 0.90

3 biased

4 $q = \overline{x} + (t_{0.05,n-1})(\frac{s}{\sqrt{n}})$ Note: this problem should read P $\left[\bar{X} < q\right]$

5 16

6 0.314

7 a) 62 b) χ^2 with 9 dof's

8 175

9 $\hat{\theta} = \frac{1}{n}\sum_{i=1}^{n} x_i$

10 $\hat{\lambda} = \frac{n}{\sum_{i=1}^{n} x_i}$

11 13

12 a) $[547.1,\ 552.9]$ b) $[29.88,\ 94.84]$

13 $-0.338 \leq \mu_1 - \mu_2 \leq 0.438$

14 84

15 a) 0.36 b) 0.7888

16 $\hat{\theta} = \frac{-n}{\sum_{i=1}^{n} \ln(x_i)}$

17 0.36

18 a) $[1004.8,\ 1023.2]$ b) $[1004.3,\ 1023.7]$ c) 68

19 a) $\overline{x}_{AB} = 100$, $s^2_{AB} = 0.19$, $\overline{x}_{BC} = 50$, $s^2_{BC} = 0.04$ b) $[99.27,\ 100.73]$ c) $[149.32,\ 150.68]$

20 a) don't reject H_o b) $[16.74,\ 27.26]$

21 a) $\overline{x} = 7.46$, $s^2 = 0.0043$ b) $[7.422,\ 7.498]$ c) yes

22 conclude that $p > 0.01$ (since $\hat{z} = 4.96 > 2.58$)

23 reject the claim

24 reject claim at 5% sig. level