Math 254 Practice Problems Part III

1. You are given the following measurements taken from a normally distributed population: 9.88 9.91 10.34 10.74 11.09 11.31 11.52 12.17. Find a 90% confidence interval for the population mean.

2. The Earth's temperature (in degrees F) is measured from the air and from the ground on a single day. Differences are normally distributed. Test whether the mean air temperature is higher than the mean ground temperature with $\alpha = 0.05$.

Location	Air	Ground
1	52.9	49.1
2	52.4	52.6
3	37.1	36.0
4	42.8	42.7
5	55.4	51.9

3. Find a 99% lower confidence bound (LCB) for σ^2 based on a sample of 10 measurements from a normal population with $\bar{x} = 8.72$ and $s^2 = 1.43$.

4. Medical statistics show that deaths due to three major causes (call them Cause A, Cause B and Cause C) account for 31%, 22% and 18% of all deaths respectively. Other causes account for the other 29% of deaths. Listed below are the causes of death of 1,000 people collected in a provincial study. Test at $\alpha = 0.05$ whether the provincial study supports the medical statistics.

Cause	A	B	C	Other
Deaths	358	191	165	286