

0.5

Test of Statistics

1. Draw a box plot for the following data (25%):

207.3	227.7	225.4	272.7	219.0
218.9	246.2	210.3	236.7	215.0
224.1	224.3	269.9	271.4	235.0
214.1	233.7	223.7	254.4	235.6
219.2	210.3	216.4	233.9	197.4

2. If a normal manufacturing process with mean μ and variance σ^2 has range of specification equal to 6σ , we call it a t-sigma process. If data point is out of specification, it is called defective. Fill out the space with underline:
- 甲、For any t-sigma process, the _____ t is, the better the process is. (5%)
- 乙、For any process, the larger its sigma is, the _____ its yield is. (5%)
- 丙、For any process, the closer its mean to the target is, the _____ its defective rate is. (5%)
3. Assume the standard normal distribution Φ is available. Given a normal distribution with mean 3 and variance 9, what is the chance having value between 0 and 8? (10%)
4. If you have a sample of data from a continuous population from a manufacturing process, what information can you check? List them by numbers (20%)
5. Give a test statistic to test means of two populations? (14%)
6. X is normally distributed with mean 2 and variance 4 and Y is normally distributed with mean 3 and variance 9. (1) $E(3X+5Y)=?$ (4%) (2) If X and Y are independent $\text{Var}(2Y-X)=?$ (4%) (3) $E(2X^2+X)=?$ (4%) (4) If X and Y are independent, $E(XY)=?$ (4%)