Term Test B version 1

(1)[5 points] A bakery product maintains its quality for a mean of 112 hours after production with a standard deviation of 10 hours. The distribution is normal. The "best before" date is chosen such that 95% of the product maintain their quality by that date. How many hours after production should the "best before" date be set?

(2)[5 points] In a meat manufacturing plant, cattle are processed at a work station. On average, 0.72 cattle per hour create problems that cause an interruption in the work flow. Calculate the probability that a work station will experience strictly less than four interruptions on a given work day (eight hours).

(3)[5 points] A production cycle requires good weather. In September, based on many years of experience, 8 out of 11 days have good enough weather for the production cycle. Calculate the probability that on exactly four out of these five days the weather was good enough for the production cycle:
September 5, 2011
September 5, 2012
September 5, 2013
September 5, 2014
September 5, 2015

(4)[5 points] A company that makes processed foods receives an ingredient in single units from a supplier. 19.2% of the ingredients are A-grade quality, 78.3% are B-grade quality, and the rest is spoiled. On Tuesday, the supplier drops off 600 units. Estimate (!) the probability that 20 or more units are spoiled.

(5)[5 points] A factory worker produces a mean of 96.5 units of a food product per hour with a standard deviation of 4.7 units. The distribution is normal. Determine the missing number x in the following statement: 92% of the time, the factory worker produces more than x units in an hour.