Problems for exercises in Random phenomena course - 9th set

1. Effectiveness of a new anti-cellulite cream is tested. On the first group of women the actual cream is applied while on the other, so called control group, placebo is applied. After one-month of therapy, reduction of thigh circumference at the desired location is measured. Data in mm is gathered in the table.

Cream	13	12	8	10	11	4	5	9
Placebo	8	2	6	7	5	9	0	3

   It is estimated that the thigh circumference is normally distributed in both cases. Can we claim that the cream significantly influences the reduction of cellulite? Test means and standard deviations. R: Yes. $t = 2.53$, $p = 0.024$ and $f = 1.06$, $p = 0.941$

2. Machines A and B should produce tablets of equal mass. Several tablets produced by each of the machines are weighted and the results (in mg) are given in the following table:

A	49.0	48.5	50.3	49.5	50.7	50.3		
B	50.6	48.8	51.4	50.6	51.1	49.4	49.2	50.8

   It is assumed that the tablet mass is normally distributed for both machines. Can we claim that the distribution is the same on both machines? R: Yes. $t = -1.05$, $p = 0.314$ and $f = 0.792$, $p = 0.825$

Note: To solve the problems, tabulated normal, Student, χ^2, and Snedecor probability distributions are required (Tables A.1–3 and A.5–8 in the textbook *Opis naključnih pojavov*).