CHAPTER VI

NORMAL DISTRIBUTION

EXERCISES VI **19.03.2002**

PROBLEM 1

Floods in a stream have the mean 600 m^3/s and the standard deviation 400 m^3/s. Answer the following questions assuming normal distribution.

a) What is the probability that the flood flow any year exceeds 700 m^3/s ?
b) What is the 100-year flood discharge ?

CHAPTER VI

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EXERCISES VI **SOLUTIONS** **19.03.2002**

SOLUTION 1

a)

The values of the standard normal variable corresponding to 700, respectively, are computed as:

$$\mathbf{Z = (X - \mu_X) / \sigma_X}$$

$Z = (700 - 600) / 400 = 0,25$

From the table the following probability is taken;

$$\boldsymbol{F(Z) = F_1(Z)}$$

$F(0,25) = F_1(0,25) = 0,4013$

b)

1 / 100 = 0,01 (the probability that the 100-year flood discharge)

$F_1(Z) = 0,01$

$Z \cong 2,325$

$$\mathbf{Z = (X - \mu_X) / \sigma_X}$$

$Z = (X - 600) / 400 = 2,325$

$X = 1530\ m^3/s$