Емельянов, введение в ML, задание 4

1

Дано

$$\overline{x} = 80; \sigma = 16; n = 256$$

$$\Phi_0(z_{0.475}) = 0.475; z_{0.475} = 1.96$$

$$P\left(x \in \left(\overline{x} - z_{0.475}\frac{\sigma}{\sqrt{n}}; \overline{x} + z_{0.475}\frac{\sigma}{\sqrt{n}};\right)\right) = 0.95$$

$$P\left(x \in (80 - 1.96; 80 + 1.96)\right) = 0.95$$

$$P\left(x \in (78.94; 81.96)\right) = 0.95$$

2

$$\overline{x} = \frac{1}{10}\sum_{i=0}^{10} x_i = 198.5$$

$$Dx = \frac{1}{9}\sum_{i=0}^{10}(x_i - \overline{x})^2 = 357/18 \approx 19.83$$

$$\sigma = \sqrt{Dx} \approx 4.453$$

$$\mu = \frac{\sigma}{\sqrt{10}} \approx 1.4083$$

$$t = \frac{|\overline{x} - 200|}{\mu} \approx 1.0651$$

$$1.0651 = t < t(0.99, 10) = 2.764$$