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copybook

Вариант 39

$$p(x|w_1) = \begin{cases} \frac{2}{1521}x, & x \in [0, 39] \\ 0, & \text{else} \end{cases}$$

$$p(x|w_2) = \begin{cases} \frac{2}{39} - \frac{2}{1521}x, & 0 \le x \le 39 \\ 0, & \text{else} \end{cases}$$

$$p(w_1) = \frac{1}{39} \qquad p(w_2) = \frac{38}{39}$$

$$p(x) = p(w_1) \cdot p(x|w_1) + p(w_2)\, p(x|w_2) =$$

$$= \begin{cases} -\frac{4}{6591}x + \frac{76}{1521}, & 0 \le x \le 39 \\ 0, & \text{else} \end{cases}$$

$$p(w_i|x) = \frac{p(w_i) \cdot p(x|w_i)}{p(x)}$$

$$p(w_1|x) = \frac{\frac{1}{39} \cdot \frac{2}{1521^3}x}{\frac{2}{507}\left(-\frac{2}{13}x + \frac{38}{3}\right)} =$$

$$= \begin{cases} \frac{x}{117\left(-\frac{2}{13}x + \frac{38}{3}\right)}, & 0 \le x \le 39 \\ 0, & \text{else} \end{cases}$$

$$P(w_2|x) = \left/ \frac{\frac{38}{39}\cdot\left(\frac{2}{39} - \frac{2}{1521}x\right)}{\frac{-4}{6591}x + \frac{76}{1521}} \right. =$$

$$= \frac{19(x-39)}{3(3x-247)} \Big/ = \begin{cases} \frac{19(x-39)}{3(3x-247)}, & x \in [0,39] \\ 0, & \text{else} \end{cases}$$

$$D^{(1)} = \{x: P(w_1|x) \geq P(w_2|x)\} =$$

$$= \{x: x \geq 38\}$$

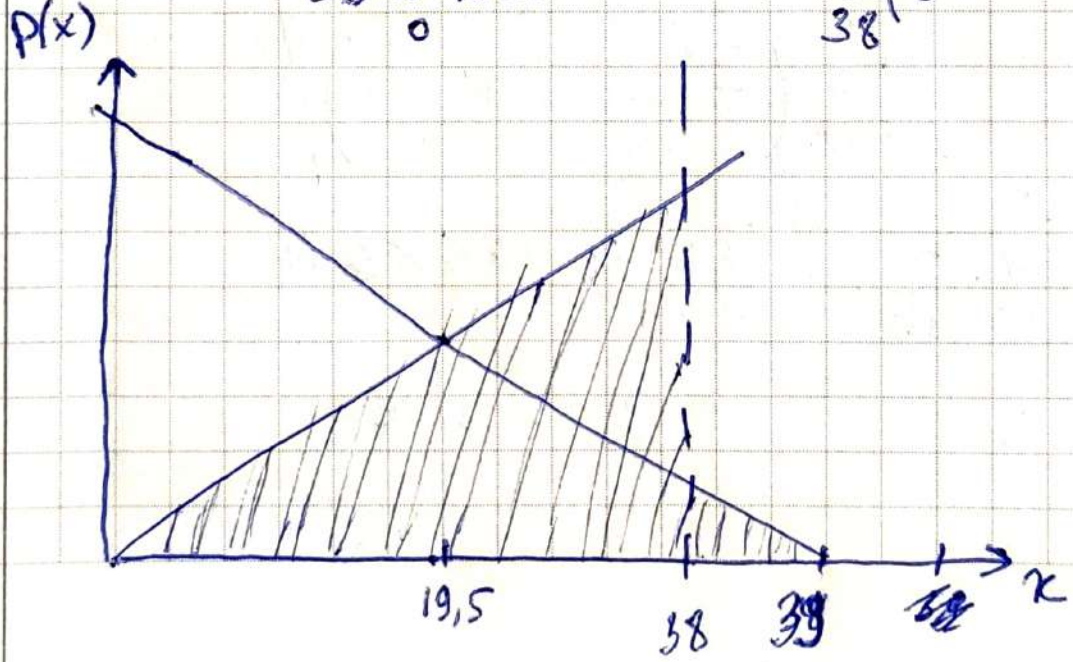
$$D^{(2)} = \{x: P(w_1|x) < P(w_2|x)\} =$$

$$= \{x: x < 38\}$$

т. е $f_B: x = 38$

Посчитаем в-ть ошибки:

$$P(\text{error}) = \frac{1}{39}\int_0^{38} \frac{2}{1521}x\,dx + \frac{38}{39}\int_{38}^{39}\left(\frac{2}{39} - \frac{2}{1521}x\right)dx$$



$$\approx \frac{1}{39} \cdot 0{,}94938 + \frac{38}{39} \cdot 0{,}000657 \approx 0{,}0249$$