

Композиционное правило нечеткого вывода Заде

Дано нечеткое правило: если $x = \tilde{A}$, то $y = \tilde{B}$, где \tilde{A} и \tilde{B} — заданные нечеткие множества. Найти y при $x = \tilde{C}$. Нечеткое отношение рассчитывается по t -норме — минимум.

Задача 19.1.

$$\begin{aligned} A &= (0.8/a, 0.3/b, 0.9/c, 0.2/d, 0.7/e), \\ B &= (0/X, 0.4/Y, 0.4/Z, 0.6/V), \\ C &= (0.7/a, 0.7/b, 0.7/c, 0.6/d, 0.3/e). \end{aligned}$$

Задача 19.2.

$$\begin{aligned} A &= (0/a, 0.9/b, 0.7/c, 0.9/d, 0/e), \\ B &= (0.1/X, 0.6/Y, 0.5/Z, 0.4/V), \\ C &= (0.8/a, 0.9/b, 0.5/c, 0.4/d, 0.5/e). \end{aligned}$$

Задача 19.3.

$$\begin{aligned} A &= (0.7/a, 0.1/b, 0.4/c, 1/d, 0.7/e), \\ B &= (0.2/X, 0.3/Y, 0.1/Z, 0.4/V), \\ C &= (0.9/a, 0.3/b, 0.4/c, 0.7/d, 0.3/e). \end{aligned}$$

Задача 19.4.

$$\begin{aligned} A &= (0.8/a, 0.1/b, 0.4/c, 0.6/d, 0.9/e), \\ B &= (0.5/X, 0.6/Y, 0.5/Z, 0.6/V), \\ C &= (0.1/a, 0.2/b, 0.1/c, 0.2/d, 0.7/e). \end{aligned}$$

Задача 19.5.

$$\begin{aligned} A &= (0.2/a, 0.2/b, 0.8/c, 0.1/d, 0.7/e), \\ B &= (0.2/X, 0.6/Y, 0.1/Z, 0.2/V), \\ C &= (0.9/a, 0.9/b, 0.4/c, 0.5/d, 1/e). \end{aligned}$$

Задача 19.6.

$$\begin{aligned} A &= (0.9/a, 0.9/b, 0.7/c, 0/d, 0.7/e), \\ B &= (0.2/X, 0.1/Y, 0.4/Z, 0.1/V), \\ C &= (0.4/a, 0.5/b, 0.7/c, 0.4/d, 0.3/e). \end{aligned}$$

Задача 19.7.

$$\begin{aligned} A &= (0.4/a, 0.4/b, 0.4/c, 0.4/d, 0.2/e), \\ B &= (0.6/X, 0.4/Y, 0.2/Z, 0.4/V), \\ C &= (0.7/a, 0.4/b, 0.5/c, 0.7/d, 0.7/e). \end{aligned}$$

Задача 19.8.

$$\begin{aligned} A &= (0.8/a, 0.6/b, 0.3/c, 0.9/d, 0.6/e), \\ B &= (0.1/X, 0.4/Y, 0.3/Z, 0.4/V), \\ C &= (0.3/a, 0.3/b, 0.7/c, 0.4/d, 0.7/e). \end{aligned}$$

Задача 19.9.

$$\begin{aligned} A &= (0.7/a, 0.9/b, 0.4/c, 0.8/d, 0.6/e), \\ B &= (0.3/X, 0.2/Y, 0.4/Z, 0.1/V), \\ C &= (1/a, 0.2/b, 0.4/c, 0.4/d, 0.7/e). \end{aligned}$$

Задача 19.10.

$$\begin{aligned} A &= (0.5/a, 0.6/b, 0.9/c, 0.3/d, 0.4/e), \\ B &= (0.6/X, 0.3/Y, 0.4/Z, 0.5/V), \\ C &= (0.2/a, 0.4/b, 1/c, 0.8/d, 0.5/e). \end{aligned}$$

Задача 19.11.

$$\begin{aligned} A &= (0.9/a, 0.5/b, 0.6/c, 0.2/d, 0/e), \\ B &= (0/X, 0/Y, 0.6/Z, 0.3/V), \\ C &= (0.7/a, 0/b, 0.6/c, 0.3/d, 0.4/e). \end{aligned}$$

Задача 19.12.

$$\begin{aligned} A &= (0.4/a, 0.1/b, 0.8/c, 0.1/d, 0.5/e), \\ B &= (0.5/X, 0.2/Y, 0/Z, 0.4/V), \\ C &= (0.1/a, 0.9/b, 0/c, 0.4/d, 0.2/e). \end{aligned}$$

Задача 19.13.

$$\begin{aligned} A &= (0.8/a, 0.3/b, 0.9/c, 0.2/d, 0.4/e), \\ B &= (0.1/X, 0.1/Y, 0.2/Z, 0.5/V), \\ C &= (0.3/a, 0.5/b, 0.5/c, 0.5/d, 0/e). \end{aligned}$$

Задача 19.14.

$$\begin{aligned} A &= (0.4/a, 0.5/b, 0.5/c, 0.8/d, 0.6/e), \\ B &= (0.5/X, 0.3/Y, 0.4/Z, 0.1/V), \\ C &= (0.1/a, 1/b, 0.7/c, 0.1/d, 0.5/e). \end{aligned}$$

Задача 19.15.

1

$$A = (0.5/a, 0.7/b, 0.6/c, 1/d, 0.6/e),$$
$$B = (0.5/X, 0.3/Y, 0.3/Z, 0.3/V),$$
$$C = (0.6/a, 0.6/b, 0.6/c, 0.6/d, 0.7/e).$$

Задача 19.16.

1

$$A = (0.9/a, 0.6/b, 0.1/c, 0.8/d, 0.5/e),$$
$$B = (0.3/X, 0.5/Y, 0.3/Z, 0.2/V),$$
$$C = (0.5/a, 0.9/b, 0.3/c, 0.5/d, 0.3/e).$$

Задача 19.17.

1

$$A = (1/a, 0.5/b, 0.3/c, 0.9/d, 0.3/e),$$
$$B = (0.5/X, 0.4/Y, 0.1/Z, 0.1/V),$$
$$C = (0.6/a, 0.4/b, 0.7/c, 0.1/d, 0.4/e).$$

Задача 19.18.

1

$$A = (0.9/a, 0.4/b, 0/c, 0.5/d, 0.5/e),$$
$$B = (0.4/X, 0.5/Y, 0.3/Z, 0.4/V),$$
$$C = (0.6/a, 0.4/b, 0.7/c, 0.4/d, 0.5/e).$$

Задача 19.19.

1

$$A = (1/a, 1/b, 0.5/c, 0.1/d, 0.2/e),$$
$$B = (0.6/X, 0.3/Y, 0.2/Z, 0.5/V),$$
$$C = (0.7/a, 0.6/b, 0.2/c, 0.8/d, 0.6/e).$$

Задача 19.20.

1

$$A = (0.4/a, 0.1/b, 0.6/c, 0.5/d, 0.6/e),$$
$$B = (0.6/X, 0.1/Y, 0.7/Z, 0.3/V),$$
$$C = (0.7/a, 0.4/b, 1/c, 0.3/d, 0.2/e).$$

Задача 19.21.

1

$$A = (0.5/a, 0/b, 0.9/c, 0.7/d, 0.4/e),$$
$$B = (0.7/X, 0.1/Y, 0.4/Z, 0.3/V),$$
$$C = (0.3/a, 0.3/b, 0.3/c, 0.2/d, 0.1/e).$$

Задача 19.22.

1

$$A = (0.9/a, 0.4/b, 0/c, 0.9/d, 0.5/e),$$
$$B = (0.4/X, 0.4/Y, 0.4/Z, 0.4/V),$$
$$C = (0/a, 0/b, 0.5/c, 1/d, 0/e).$$

Задача 19.23.

1

$$A = (0.8/a, 0.4/b, 0.4/c, 1/d, 0.5/e),$$
$$B = (0.4/X, 0.3/Y, 0.1/Z, 0.3/V),$$
$$C = (0.5/a, 0/b, 0.4/c, 0.6/d, 0.5/e).$$

Задача 19.24.

1

$$A = (0.6/a, 0.7/b, 0.6/c, 0.5/d, 0/e),$$
$$B = (0.5/X, 0.2/Y, 0/Z, 0.4/V),$$
$$C = (0.6/a, 0.5/b, 0/c, 0.7/d, 0.8/e).$$

Задача 19.25.

1

$$A = (0.9/a, 0.2/b, 0/c, 0.1/d, 0.3/e),$$
$$B = (0.2/X, 0.5/Y, 0.4/Z, 0.6/V),$$
$$C = (0.9/a, 0.5/b, 0.4/c, 0.6/d, 0.3/e).$$

Задача 19.26.

1

$$A = (0.8/a, 0.6/b, 0.1/c, 0/d, 0.8/e),$$
$$B = (0.3/X, 0/Y, 0.4/Z, 0.1/V),$$
$$C = (0.4/a, 0.3/b, 0.7/c, 0.4/d, 0.3/e).$$

Задача 19.27.

1

$$A = (0.4/a, 0.9/b, 0.3/c, 0.9/d, 0.1/e),$$
$$B = (0.3/X, 0.4/Y, 0.2/Z, 0.3/V),$$
$$C = (0.5/a, 0.3/b, 0.1/c, 0.7/d, 0.8/e).$$

Задача 19.28.

1

$$A = (0.8/a, 0.8/b, 0.6/c, 0.4/d, 0.1/e),$$
$$B = (0.1/X, 0/Y, 0.3/Z, 0.6/V),$$
$$C = (0.8/a, 0/b, 0.3/c, 0.6/d, 0.3/e).$$

Задача 19.29.

1

$$A = (0/a, 0.5/b, 1/c, 0.9/d, 0.1/e),$$
$$B = (0.3/X, 0.6/Y, 0.6/Z, 0.4/V),$$
$$C = (0.4/a, 0.6/b, 0.6/c, 1/d, 0.4/e).$$

Задача 19.30.

1

$$A = (1/a, 0.4/b, 0.6/c, 0.1/d, 0.1/e),$$
$$B = (0.4/X, 0.3/Y, 0.1/Z, 0.5/V),$$
$$C = (0.6/a, 0.7/b, 0.1/c, 0.5/d, 0/e).$$

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№	X	Y	Z	V
1	0	0.4	0.4	0.6
2	0.1	0.6	0.5	0.4
3	0.2	0.3	0.1	0.4
4	0.5	0.6	0.5	0.6
5	0.2	0.6	0.1	0.2
6	0.2	0.1	0.4	0.1
7	0.4	0.4	0.2	0.4
8	0.1	0.4	0.3	0.4
9	0.3	0.2	0.4	0.1
10	0.6	0.3	0.4	0.5
11	0	0	0.6	0.3
12	0.2	0.2	0	0.2
13	0.1	0.1	0.2	0.5
14	0.5	0.3	0.4	0.1
15	0.5	0.3	0.3	0.3
16	0.3	0.5	0.3	0.2
17	0.5	0.4	0.1	0.1
18	0.4	0.5	0.3	0.4
19	0.6	0.3	0.2	0.5
20	0.6	0.1	0.6	0.3
21	0.3	0.1	0.3	0.3
22	0.4	0.4	0.4	0.4
23	0.4	0.3	0.1	0.3
24	0.5	0.2	0	0.4
25	0.2	0.5	0.4	0.6
26	0.3	0	0.4	0.1
27	0.3	0.4	0.2	0.3
28	0.1	0	0.3	0.6
29	0.3	0.6	0.6	0.4
30	0.4	0.3	0.1	0.5