

**Дискретная математика**  
Домашнее задание №8.  
Вариант №59

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Операнды:

A	B
2.7	0.034

1. Формат Φ1

$$A = (2.7)_{10} = (2.B(3))_{16} = (0.2B(3))_{16} * 16^1$$

0	1	0	0	0	0	0	1	0	0	1	0	1	0	1	1
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$$B = (0.034)_{10} = (0.08B)_{16} = (0.8B)_{16} * 16^{-1}$$

0	0	1	1	1	1	1	1	1	0	0	0	1	0	1	1
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2. Формат Φ2

$$A = (2.7)_{10} = (10.1011(0011))_2 = (0.101011(0011))_2 * 2^2$$

0	1	0	0	0	0	0	1	0	1	0	1	0	1	1	0
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$$B = (0.034)_{10} = (0.000010001011010)_2 = (0.10011111101)_2 * 2^{-4}$$

0	0	1	1	1	1	1	0	0	1	0	0	1	1	1	1
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1) Деление в формате Ф1:

$$X_C = X_A - X_B + d = 66$$

$$P_C = P_A - P_B = 2$$

N	Действие	Делимое	Частное
0	$M_A$ [ $-M_B$ ] <sub>доп</sub> $R_0$	0 0 0 1 0 1 0 1 1 1 0 1 1 1 0 1 0 1 <b>1</b> 1 0 1 0 0 0 0 0	0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 <b>0</b>
1	$\leftarrow R_0$ $M_{B \text{ пр}}$ $R_1$	1 0 1 0 0 0 0 0 1 0 1 0 0 0 1 0 1 1 <b>1</b> 1 1 0 0 1 1 0 0	0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 <b>0</b>
2	$\leftarrow R_1$ $M_{B \text{ пр}}$ $R_2$	1 1 0 0 1 1 0 0 1 0 1 0 0 0 1 0 1 1 <b>0</b> 0 0 1 0 0 1 0 0	0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 <b>1</b>
3	$\leftarrow R_2$ [ $-M_B$ ] <sub>доп</sub> $R_3$	0 0 1 0 0 1 0 0 0 1 0 1 1 1 0 1 0 1 <b>1</b> 1 0 1 1 1 1 0 1	0 0 0 0 0 0 1 0  0 0 0 0 0 0 1 0 <b>0</b>
4	$\leftarrow R_3$ $M_{B \text{ пр}}$ $R_4$	1 0 1 1 1 1 0 1 0 0 1 0 0 0 1 0 1 1 <b>0</b> 0 0 0 0 0 1 0 1	0 0 0 0 0 1 0 0  0 0 0 0 0 1 0 1 <b>1</b>
5	$\leftarrow R_4$ [ $-M_B$ ] <sub>доп</sub> $R_5$	0 0 0 0 0 1 0 1 0 1 0 1 1 1 0 1 0 1 <b>1</b> 0 1 1 1 1 1 1 1	0 0 0 0 1 0 1 0  0 0 0 0 1 0 1 0 <b>0</b>
6	$\leftarrow R_5$ $M_{B \text{ пр}}$ $R_6$	0 1 1 1 1 1 1 1 0 0 1 0 0 0 1 0 1 1 <b>1</b> 1 0 0 0 1 0 0 1	0 0 0 1 0 1 0 0  0 0 0 1 0 1 0 0 <b>0</b>
7	$\leftarrow R_6$ $M_{B \text{ пр}}$ $R_7$	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 1 1 <b>1</b> 1 0 0 1 1 1 0 1	0 0 1 0 1 0 0 0  0 0 1 0 1 0 0 0 <b>0</b>

<b>8</b>	$\leftarrow R_7$	<b>1 0 0 1 1 1 0 1 0</b>	<b>0 1 0 1 0 0 0 0</b>
	$M_{B_{np}}$	<b>0 1 0 0 0 1 0 1 1</b>	
	$R_8$	<b>1 1 1 0 0 0 1 0 1</b>	<b>0 1 0 1 0 0 0 0</b>

$$C = (0.50)_{16} * 16^2 = (50)_{16} = 80.$$

Определим абсолютную и относительную погрешности результата:

$$\Delta C = 79.412 - 80 = -0.588 \text{ (точное значение);}$$

$$\delta C = \left| \frac{-0.588}{79.412} \right| * 100\% \approx 0.74\%.$$

Погрешность вызвана неточным представлением операндов.

2) Деление в формате Ф2:

$$X_C = X_A - X_B + d = 134$$

$$P_C = P_A - P_B = 6$$

$$A = (2.7)_{10} = (10.1011(0011))_2 = (0.101011(0011))_2 * 2^2$$

$$B = (0.034)_{10} = (0.000010011111101)_2 = (0.10011111101)_2 * 2^{-4}$$

N	Действие	Делимое	Частное
0	$M_A$ $[-M_B]_{\text{доп}}$ $R_0$	0 1 0 1 0 1 1 0 0 1 0 1 1 0 0 0 0 1 0 0 0 0 0 1 1 0 1	0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 1
1	$\leftarrow R_0$ $[-M_B]_{\text{доп}}$ $R_1$	0 0 0 0 1 1 0 1 0 1 0 1 1 0 0 0 0 1 1 0 1 1 1 1 0 1 1	0 0 0 0 0 0 1 0  0 0 0 0 0 0 1 0
2	$\leftarrow R_1$ $M_{B \text{ пр}}$ $R_2$	0 1 1 1 1 0 1 1 0 0 1 0 0 1 1 1 1 1 1 1 0 0 1 0 1 0 1	0 0 0 0 0 1 0 0  0 0 0 0 0 1 0 0
3	$\leftarrow R_2$ $M_{B \text{ пр}}$ $R_3$	1 0 0 1 0 1 0 1 0 0 1 0 0 1 1 1 1 1 1 1 1 0 0 1 0 0 1	0 0 0 0 1 0 0 0  0 0 0 0 1 0 0 0
4	$\leftarrow R_3$ $M_{B \text{ пр}}$ $R_4$	1 1 0 0 1 0 0 1 0 0 1 0 0 1 1 1 1 1 0 0 0 1 1 0 0 0 1	0 0 0 1 0 0 0 0  0 0 0 1 0 0 0 1
5	$\leftarrow R_4$ $[-M_B]_{\text{доп}}$ $R_5$	0 0 1 1 0 0 0 1 0 1 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1	0 0 1 0 0 0 1 0  0 0 1 0 0 0 1 0

<b>6</b>	$\leftarrow R_5$ $M_{B \text{ пр}}$ $R_6$	<b>1 1 0 0 0 0 1 1 0</b> <b>0 1 0 0 1 1 1 1 1</b> <b>0 0 0 1 0 0 1 0 1</b>	<b>0 1 0 0 0 1 0 0</b>  <b>0 1 0 0 0 1 0 1</b>
<b>7</b>	$\leftarrow R_6$ $[-M_B]_{\text{доп}}$ $R_7$  $M_C \rightarrow$	<b>0 0 1 0 0 1 0 1 0</b> <b>1 0 1 1 0 0 0 0 1</b> <b>1 1 0 1 0 1 0 1 1</b>	<b>1 0 0 0 1 0 1 0</b>  <b>1 0 0 0 1 0 1 0</b>  <b>0 1 0 0 0 1 0 1 0</b>

$$C = (0.10001010)_2 * 2^7 = (1000101)_2 = 69.$$

Определим абсолютную и относительную погрешности результата:

$$\Delta C = 69.535 - 69 = 0.535 \text{ (точное значение);}$$

$$\delta C = \left| \frac{0.535}{69.535} \right| * 100\% \approx 0.72\%.$$

Погрешность вызвана неточным представлением операндов.