Р3112
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A = 67,54
B = 72,34

1) Формат Ф1

A = $67,54_{10}$ = $43,8A_{16}$ = $0,438A_{16} * 16^2$
0|1000010|0100 0011 1001

B = $72,34_{10}$ = $48,57_{16}$ = $0,4857_{16} * 16^2$
0|1000010|0100 1000 0101

$\quad$ X_A = 1000010
- $\underline{X_B = 1000010}$
$\qquad$ 0000000

а) A > 0, B > 0

$\quad$ M_A = .010000111001
+ $\underline{M_B = .010010000101}$
$\quad$ M_C = .100010111110

C^* = $0,8BE_{16} * 16^2$ = $8B,E_{16}$ = $139,875_{10}$

ΔC = 139,88 − 139,875 = 0,005

δC = $\left|\dfrac{0,005}{139,88}\right| * 100\% = 0,004\%$

б) A < 0, B > 0

$\quad$ M_B = .010010000101
- $\underline{M_A = .010000111001}$
$\quad$ M_c = .000001001100

C^* = $0,04C_{16} * 16^2$ = $4,C_{16}$ = $4,75_{10}$

ΔC = 4,8 − 4,75 = 0,05

δC = $\left|\dfrac{0,05}{4,8}\right| * 100\% = 1\%$

в) A > 0, B < 0

$M_{B(доп)}$ = 1.101101111011
+ $\underline{M_A \quad = 0.010000111001}$
$M_{C(доп)}$ = 1.111110110100
$M_c \quad$ = 1.000001001100

$C^* = -0{,}04C_{16} * 16^2 = -4{,}C_{16} = -4{,}75_{10}$

$\Delta C = -4{,}8 + 4{,}75 = -0{,}05$

$\delta C = \left|\frac{-0{,}05}{4{,}8}\right| * 100\% = 1\%$

Погрешность обусловлена неточным представлением чисел в формате

2) Формат Ф2

$A = 43{,}8A_{16} = 100\ 0011{,}1000\ 1010_2 = 0{,}100\ 0011\ 1000\ 1010_2 * 2^7$
0|10000111|00001110001

$B = 48{,}57_{16} = 100\ 1000{,}0101\ 0111_2 = 0{,}100\ 1000\ 0101\ 0111 * 2^7$
0|10000111|00100001011

X_A = 10000111
- $\underline{X_B = 10000111}$
$\qquad$ 00000000

а) A > 0, B > 0

M_A = .100001110001
+ $\underline{M_B = .100100001011}$
M_c = 1.000101111100

$M_C \rightarrow^1 = 100010111110$

$C^* = 0{,}100010111110_2 * 2^8 = 10001011{,}1110_2 = 139{,}875_{10}$

$\Delta C = 139{,}88 - 139{,}875 = 0{,}005$

$\delta C = \left|\frac{0{,}005}{139{,}88}\right| * 100\% = 0{,}004\%$

б) A < 0, B > 0

M_B = .100100001011
- $\underline{M_A = .100001110001}$
M_C = .000010011010

$C^* = 0{,}000010011010_2 * 2^7 = 100{,}1101_2 = 4{,}8125_{10}$

$\Delta C = 4{,}8 - 4{,}8125 = -0{,}0125$

$\delta C = \left|\dfrac{-0{,}0125}{4{,}8}\right| * 100\% = 0{,}26\%$

в) A > 0, B < 0

$\quad M_{B(\text{доп})} = 1.011011110101$
$+\ \underline{M_A \qquad\ = 0.100001110001}$
$\quad M_{C(\text{доп})} = 1.111101100110$
$\quad M_C \qquad = 1.000010011010$

$C^* = -0{,}000010011010_2 * 2^7 = -100{,}1101_2 = -4{,}8125_{10}$

$\Delta C = -4{,}8 + 4{,}8125 = 0{,}0125$

$\delta C = \left|\dfrac{0{,}0125}{4{,}8}\right| * 100\% = 0{,}26\%$

В формате Ф2 результат получился точнее из-за того, что операнды представлены точнее