**Дискретная математика**

Домашнее задание №6

«Сложение чисел с плавающей запятой»

Вариант №113

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Варианты задания

|  |  |
| --- | --- |
| ***A*** | ***B*** |
| 0.047 | 0.874 |

Ход работы

1. Формат *Ф1*

*А =* (0.047)10 = (0.0C083)16 = (0.С08)16 \* 16-1

М*А*

XA = -1 + 64 = 63

характеристика

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

0 1 7 8 19

*B* = (0.847)10 = (0.DFBE)16 ≈ (0.DFC)16 \* 160

М*B*

XB = 0 + 64 = 64

характеристика

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

0 1 7 8 19

X*A* = 0 1 1 1 1 1 1

X*B* = 1 0 0 0 0 0 0

(X*A*-X*B*)доп = 1 1 1 1 1 1 1

X*A*-X*B* = -1, X*C* = X*A* = 64

1. *А*>0, *B*>0:

*4*

М*А* = . 0 0 0 0 1 1 0 0 0 0 0 0

+

М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

М*С* = 0. 1 1 1 0 1 0 1 1 1 1 0 0

МС = 1 1 1 0 1 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |

С\* = (0.EBC)16 \* 160 = 0.9209

Cт = A + B = 0.921

∆*C* = *CT* − *C*∗ = 0*.*0001

δ*С* = · 100% ≈ 0.0108%

б) A > 0 ; B<0

М*А* = . 0 0 0 0 1 1 0 0 0 0 0 0

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М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

М*Сдоп* = . 0 0 1 0 1 1 0 0 0 1 0 0

МС = 1 1 0 1 0 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |

С\* = -(0,D3С)16 \* 160 = -0.827148437

Ст = А + B = -0.827

∆*C* = *CT* − *C*∗ = 0*.*0001484375

δ*С* = · 100% ≈ 0.017949%

в) A < 0; B>0

М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

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-МА = . 0 0 0 0 1 1 0 0 0 0 0 0

М*С* = . 1 1 0 1 0 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |

C\* = 0,D3C \* 160 = 0.8271484375

Cт = A + B = 0.827

∆*C* = *CT* − *C*∗ = −0*.*0001484375

δ*С* = · 100% ≈ 0.017949%

1. **Формат *Ф2***

*А* = (0.047)10 = 0.1100000010000…2

*А = 0.1100000010002* \* 2-4

XA = -4 + 128 = 124

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

B = 0.874 = (0.110111111100111…2

*B = 0.1101111111002 \* 20*

XB = 0 + 128 = 128

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

X*A* = 0 1 1 1 1 0 0

X*B* = 1 0 0 0 0 0 0

(X*A*-X*B*)доп = 1 1 1 1 1 0 0

X*A*-X*B* = -4, X*C* = X*A* = 124

1. A>0; B>0

*4*

М*А* = . 0 0 0 0 1 1 0 0 0 0 0 0

+

М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

М*С* = 0. 1 1 1 0 1 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

C\* = 0,1110101111100\* 20 = 0.9208984375

Cт = A + B = 0.921

∆*C* = *CT* − *C*∗ = 0*.*0001015625

δ*С* = · 100% ≈ 0.011027%

б) A >0 ; B < 0

М*А* = . 0 0 0 0 1 1 0 0 0 0 0 0

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М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

М*Сдоп*= . 1 1 1 0 1 1 0 0 0 1 0 0

МС = 0 0 0 1 0 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

С\* = 0,1110101111100\* 20 = -0.8271484375

Ст = А + B = -0.827

∆*C* = *CT* − *C*∗ = 0*.*0001484375

δ*С* = · 100% ≈ 0.017949%

в) A<0; B>0

М*В* = . 1 1 0 1 1 1 1 1 1 1 0 0

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-МА = . 0 0 0 0 1 1 0 0 0 0 0 0

М*С* = . 1 1 0 1 0 0 1 1 1 1 0 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |

C\* = 0,1110101111100\* 20 = 0.8271484375

Cт = A + B = 0.827

∆*C* = *CT* − *C*∗ = −0*.*0001484375

δ*С* = · 100% ≈ 0.017949%