Министерство образования и науки РФ

Федеральное государственное автономное

образовательное учреждение высшего образования

«Санкт-Петербургский национальный исследовательский университет

информационных технологий, механики и оптики»

**факультет программной инженерии и компьютерной техники**

**ДОМАШНЯЯ РАБОТА № 8**

по дисциплине

‘Дискретная Математика’

Вариант №18

*Выполнил:*

Студент группы P3109

Mallev Sabur N.

*Преподаватель:*

Поляков Владимир

Иванович



Санкт-Петербург, 2022

Пункт 1

A = 6,6

B = 0,026

Ф1

A = 6,610 = 6,616 = 0,6616 × 161

ХА = РА + 64 = 6510 = 100 00012

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| 0 | 1 |  |  |  |  |  | 7 | 8 |  |  |  |  |  |  | 15 |

B = 0,02610 ≈ 0,06A16 = 0,6A 16 × 16-1

ХА = РА + 64 = 6310 = 011 11112

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 0 | 1 |  |  |  |  |  | 7 | 8 |  |  |  |  |  |  | 15 |

Ф2

A = 6,610 = 0110,01102 = 0,1100 11002 × 23

ХА = РА + 128 = 13110 = 1000 00112

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 0 |  |  |  |  |  |  |  | 8 | 9 |  |  |  |  |  | 15 |

B = 0,02610 ≈ 0,0000 0110 10102 = 0,1101 01002 × 2-5

ХА = РА + 128 = 12310 = 0111 10112

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 0 | 1 |  |  |  |  |  |  | 8 | 9 |  |  |  |  |  | 15 |

Пункт 2 (3, 5)

|  |  |  |
| --- | --- | --- |
| - | XA = | 1 0 0 0 0 0 1 |
| XB = | 0 1 1 1 1 1 1 |
| XA - XB = | | 0 0 0 0 0 1 0 |
| + *d* | | 1 0 0 0 0 0 0 |
| XC = | | 1 0 0 0 0 1 0 |

РС = 2

|  |  |  |  |
| --- | --- | --- | --- |
| № Шага | Действие | Делимое | Частное |
| **0** | МА | **0 0 1 1 0 0 1 1 0** | **0 0 0 0 0 0 0 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** | **R0< 0** |
| R0 | **1 1 1 1 1 1 1 0 0** | **0 0 0 0 0 0 0 0** |
|  |  |  |
| **1** | ←R0 | **1 1 1 1 1 1 0 0 0** | **0 0 0 0 0 0 0 0** |
| MB пр. | **0 0 1 1 0 1 0 1 0** |  |
| R1 | **0 0 1 1 0 0 0 1 0** | **0 0 0 0 0 0 0 1** |
|  |  |  |
| **2** | ←R1 | **0 1 1 0 0 0 1 0 0** | **0 0 0 0 0 0 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R2 | **0 0 1 0 1 1 0 1 0** | **0 0 0 0 0 0 1 1** |
|  |  |  |
| **3** | ←R2 | **0 1 0 1 1 0 1 0 0** | **0 0 0 0 0 1 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R3 | **0 0 1 0 0 1 0 1 0** | **0 0 0 0 0 1 1 1** |
|  |  |  |
| **4** | ←R3 | **0 1 0 0 1 0 1 0 0** | **0 0 0 0 1 1 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R4 | **0 0 0 1 0 1 0 1 0** | **0 0 0 0 1 1 1 1** |
|  |  |  |
| **5** | ←R4 | **0 0 1 0 1 0 1 0 0** | **0 0 0 1 1 1 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R5 | **1 1 1 1 0 1 0 1 0** | **0 0 0 1 1 1 1 0** |
|  |  |  |
| **6** | ←R5 | **1 1 1 0 1 0 1 0 0** | **0 0 1 1 1 1 0 0** |
| MB пр. | **0 0 1 1 0 1 0 1 0** |  |
| R6 | **0 0 0 1 1 1 1 1 0** | **0 0 1 1 1 1 0 1** |
|  |  |  |
| **7** | ←R6 | **0 0 1 1 1 1 1 0 0** | **0 1 1 1 1 0 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R7 | **0 0 0 0 1 0 0 1 0** | **0 1 1 1 1 0 1 1** |
|  |  |  |
| **8** | ←R7 | **0 0 0 1 0 0 1 0 0** | **1 1 1 1 0 1 1 0** |
| [-MB]доп. | **1 1 0 0 1 0 1 1 0** |  |
| R8 | **1 1 0 1 1 1 0 1 0** | **1 1 1 1 0 1 1 0** |
|  |  |  |

C\* = (F,6)16 · 161 = F616 = 24610

CT ≈ 253,846

∆C = CT – C\* = 253,846 – 246 = 7,846

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| δС = | ∆С | \* 100% = | 7,846 | \* 100% ≈ 3%, |
| СT | 253,846 |

Погрешность вызвана неточным представлением операндов.

Пункт 4 (5)

|  |  |  |
| --- | --- | --- |
| - | XA = | 1 0 0 0 0 0 1 1 |
| XB = | 0 1 1 1 1 0 1 1 |
| XA - XB = | | 0 0 0 0 1 0 0 0 |
| + *d* | | 1 0 0 0 0 0 0 0 |
| XC = | | 1 0 0 0 1 0 0 0 |

РС = 8

|  |  |  |  |
| --- | --- | --- | --- |
| № Шага | Действие | Делимое | Частное |
| **0** | МА | **0 1 1 0 0 1 1 0 0** | **0 0 0 0 0 0 0 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** | **R0< 0** |
| R0 | **1 1 1 1 1 1 0 0 0** | **0 0 0 0 0 0 0 0** |
|  |  |  |
| **1** | ←R0 | **1 1 1 1 1 0 0 0 0** | **0 0 0 0 0 0 0 0** |
| MB пр. | **0 1 1 0 1 0 1 0 0** |  |
| R1 | **0 1 1 0 0 0 1 0 0** | **0 0 0 0 0 0 0 1** |
|  |  |  |
| **2** | ←R1 | **1 1 0 0 0 1 0 0 0** | **0 0 0 0 0 0 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R2 | **0 1 0 1 1 0 1 0 0** | **0 0 0 0 0 0 1 1** |
|  |  |  |
| **3** | ←R2 | **1 0 1 1 0 1 0 0 0** | **0 0 0 0 0 1 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R3 | **0 1 0 0 1 0 1 0 0** | **0 0 0 0 0 1 1 1** |
|  |  |  |
| **4** | ←R3 | **1 0 0 1 0 1 0 0 0** | **0 0 0 0 1 1 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R4 | **0 0 1 0 1 0 1 0 0** | **0 0 0 0 1 1 1 1** |
|  |  |  |
| **5** | ←R4 | **0 1 0 1 0 1 0 0 0** | **0 0 0 1 1 1 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R5 | **1 1 1 0 1 0 1 0 0** | **0 0 0 1 1 1 1 0** |
|  |  |  |
| **6** | ←R5 | **1 1 0 1 0 1 0 0 0** | **0 0 1 1 1 1 0 0** |
| MB пр. | **0 1 1 0 1 0 1 0 0** |  |
| R6 | **0 0 1 1 1 1 1 0 0** | **0 0 1 1 1 1 0 1** |
|  |  |  |
| **7** | ←R6 | **0 1 1 1 1 1 0 0 0** | **0 1 1 1 1 0 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R7 | **0 0 0 1 0 0 1 0 0** | **0 1 1 1 1 0 1 1** |
|  |  |  |
| **8** | ←R7 | **0 0 1 0 0 1 0 0 0** | **1 1 1 1 0 1 1 0** |
| [-MB]доп. | **1 0 0 1 0 1 1 0 0** |  |
| R8 | **1 0 1 1 1 0 1 0 0** | **1 1 1 1 0 1 1 1** |
|  |  |  |

C\* = (0,1111 0111)2 · 28 = 1111 01112 = 24710

CT ≈ 253,846

∆C = CT – C\* = 253,846 – 247 = 6,846

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| δС = | ∆С | \* 100% = | 6,846 | \* 100% ≈ 2,7%, |
| СT | 253,846 |

Погрешность вызвана неточным представлением операндов.

Пункт 6

Погрешности результатов вызваны неточным представлением операндов. В формате Ф2 операнды представлены точнее и погрешность меньше.