**Министерство образования и науки**

**Российской Федерации**

**САНКТ-ПЕТЕРБУРГСКИЙ НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО**

Факультет программной инженерии и компьютерной техники

Дисциплина: Дискретная математика

**Домашняя работа №8**

Вариант 95

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А=3,8

В=0,081

1. Формат Ф1

А=(3,8)10=3,(С)16=0,3(С) 16\*161

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

В = (0,081)10 = (0,14)16 = (0,14)16 · 160

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

2. Формат Ф2

А = (3,8)10 = (11,1100110011)2 = (0,111100110011)2 · 22

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

В = (0,081)10 = (0,00010100101)2 = (0,10100101)2 · 2-3

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

№1

XC = XA – XB + d = 65

PC = 1

|  |  |  |  |
| --- | --- | --- | --- |
| **N шага** | **Действие** | **Делимое** | **Частное** |
| **0** | *МА*  [-*МB*]доп  *R0*  *МА* →4  [-*МB*]доп  *R0* | **0 0 0 1 1 1 1 0 0**  **1 1 1 1 0 1 1 0 0**  **0 0 0 1 0 1 0 0 0**  **0 0 0 0 0 0 0 1 1**  **1 1 1 1 0 1 1 0 0**  **1 1 1 1 0 1 1 1 1** | **0 0 0 0 0 0 0 0**  **R0>0**  **1 1 0 0 0 0 0 0**  **1 1 0 0 0 0 0 0** |
| **1** | ←*R0*  *МB* пр  *R1* | **1 1 1 0 1 1 1 1 1**  **0 0 0 0 1 0 1 0 0**  **1 1 1 1 1 0 0 1 1** | **1 0 0 0 0 0 0 0**  **1 0 0 0 0 0 0 0** |
| **2** | ←*R1*  *МB* пр  *R2* | **1 1 1 1 0 0 1 1 1**  **0 0 0 0 1 0 1 0 0**  **1 1 1 1 1 1 0 1 1** | **0 0 0 0 0 0 0 0**  **0 0 0 0 0 0 0 0** |
| **3** | ←R2  *МB* пр  R3 | **1 1 1 1 1 0 1 1 0**  **0 0 0 0 1 0 1 0 0**  **0 0 0 0 0 1 0 1 0** | **0 0 0 0 0 0 0 0**  **0 0 0 0 0 0 0 1** |
| **4** | ←*R3*  [-*МB*]доп  *R4* | **0 0 0 0 1 0 1 0 0**  **1 1 1 1 0 1 1 0 0**  **0 0 0 0 0 0 0 0 0** | **0 0 0 0 0 0 1 0**  **0 0 0 0 0 0 1 1** |
| **5** | ←*R4*  [-*МB*]доп  *R5* | **0 0 0 0 0 0 0 0 0**  **1 1 1 1 0 1 1 0 0**  **1 1 1 1 0 1 1 0 0** | **0 0 0 0 0 1 1 0**  **0 0 0 0 0 1 1 0** |
| **6** | ←*R*5  *МB* пр  *R6* | **1 1 1 0 1 1 0 0 0**  **0 0 0 0 1 0 1 0 0**  **1 1 1 1 0 1 1 0 0** | **0 0 0 0 1 1 0 0**  **0 0 0 0 1 1 0 0** |
| **7** | ←*R6*  *МB* пр  *R7* | **1 1 1 0 1 1 0 0 0**  **0 0 0 0 1 0 1 0 0**  **1 1 1 0 1 1 1 0 0** | **0 0 0 1 1 0 0 0**  **0 0 0 1 1 0 0 0** |
| **8** | ←*R7*  *МB* пр  *R8* | **1 1 0 1 1 1 0 0 0**  **0 0 0 0 1 0 1 0 0**  **1 1 1 0 0 1 1 0 0** | **0 0 1 1 0 0 0 0**  **0 0 1 1 0 0 0 0** |

*С* = (0,30)16 ·162 = 3016 = 4810

Определим абсолютную и относительную погрешности результата:

Δ*С* = |48 – 46.91|= 0,

δ*С* = · 100% = 2,3%

№2

XC = XA – XB + d = 133

PC = 5

|  |  |  |  |
| --- | --- | --- | --- |
| **N шага** | **Действие** | **Делимое** | **Частное** |
| **0** | *МА*  [-*МB*]доп  *R*0 | **0 1 1 1 1 0 0 1 1**  **1 0 1 0 1 1 0 1 1**  **0 0 1 0 0 1 1 1 0** | **0 0 0 0 0 0 0 0**  **0 0 0 0 0 0 0 1** |
| **1** | ←*R*0  [-*МB*]доп  *R*1 | **0 1 0 0 1 1 1 0 0**  **1 0 1 0 1 1 0 1 1**  **1 1 1 1 1 0 1 1 1** | **0 0 0 0 0 0 1 0**  **0 0 0 0 0 0 1 0** |
| **2** | ←*R*1  *МB* пр  *R*2 | **1 1 1 1 0 1 1 1 0**  **0 1 0 1 0 0 1 0 1**  **0 1 0 0 1 0 0 1 1** | **0 0 0 0 0 1 0 0**  **0 0 0 0 0 1 0 1** |
| **3** | ←*R*2  [-*МB*]доп  *R*3 | **1 0 0 1 0 0 1 1 0**  **1 0 1 0 1 1 0 1 1**  **0 1 0 0 0 0 0 0 1** | **0 0 0 0 1 0 1 0**  **0 0 0 0 1 0 1 1** |
| **4** | ←R3  [-*МB*]доп  *R*4 | **1 0 0 0 0 0 0 1 0**  **1 0 1 0 1 1 0 1 1**  **0 0 1 0 1 1 1 0 1** | **0 0 0 1 0 1 1 0**  **0 0 0 1 0 1 1 1** |
| **5** | ←*R*4  [-*МB*]доп  *R*5 | **1 1 1 1 0 0 0 1 0**  **1 0 1 0 1 1 0 1 1**  **1 0 0 1 1 1 1 0 1** | **0 0 1 0 1 1 1 0**  **0 0 1 0 1 1 1 0** |
| **6** | ←*R*5  [-*МB*]доп  *R*6 | **0 0 1 1 1 1 0 1 0**  **1 0 1 0 1 1 0 1 1**  **1 1 1 0 1 0 1 0 1** | **0 1 0 1 1 1 0 0**  **0 1 0 1 1 1 0 0** |
| **7** | ←*R*6  *МB* пр  *R*7  *МС*→ | **1 1 0 1 0 1 0 1 0**  **0 1 0 1 0 0 1 0 1**  **1 0 1 0 0 1 1 1 1** | **1 0 1 1 1 0 0 0**  **1 0 1 1 1 0 0 0**  **0 1 0 1 1 1 0 0 0** |

*С* = (0,10111000)2·26 = (1011100,00)2 = 4610

Определим абсолютную и относительную погрешности результата:

Δ*С* = |46,91 – 46|= 0,91

δ*С* = · 100% = 1,9%

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