**Домашняя работа по дискретной математике №5**

**Вариант 181**

**Работу выполнил:**Родионов Максим, P3131

Исходная таблица соединений R(G1):

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **V/V** | **e1** | **e2** | **e3** | **e4** | **e5** | **e6** | **e7** | **e8** | **e9** | **e10** | **e11** | **e12** | **p(e)** |
| **e1** | *0* | 1 |  | 1 |  |  |  | 1 |  |  | 1 |  | **4** |
| **e2** | 1 | *0* | 1 |  | 1 | 1 |  |  |  |  |  | 1 | **5** |
| **e3** |  | 1 | *0* | 1 | 1 |  | 1 | 1 | 1 | 1 | 1 | 1 | **9** |
| **e4** | 1 |  | 1 | *0* | 1 |  |  | 1 |  | 1 |  | 1 | **6** |
| **e5** |  | 1 | 1 | 1 | *0* |  |  |  | 1 | 1 |  | 1 | **6** |
| **e6** |  | 1 |  |  |  | *0* | 1 | 1 | 1 | 1 | 1 | 1 | **7** |
| **e7** |  |  | 1 |  |  | 1 | *0* |  | 1 | 1 |  | 1 | **5** |
| **e8** | 1 |  | 1 | 1 |  | 1 |  | *0* | 1 |  |  | 1 | **6** |
| **e9** |  |  | 1 |  | 1 | 1 | 1 | 1 | *0* |  |  | 1 | **6** |
| **e10** |  |  | 1 | 1 | 1 | 1 | 1 |  |  | *0* |  |  | **5** |
| **e11** | 1 |  | 1 |  |  | 1 |  |  |  |  | *0* | 1 | **4** |
| **e12** |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 | *0* | ***9*** |

Исходная таблица соединений R(G2):

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **V/V** | **x1** | **x2** | **x3** | **x4** | **x5** | **x6** | **x7** | **x8** | **x9** | **x10** | **x11** | **x12** | **p(x)** |
| **x1** | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | **4** |
| **x2** | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **5** |
| **x3** | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **9** |
| **x4** | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | **6** |
| **x5** | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | **6** |
| **x6** | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | **6** |
| **x7** | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | **5** |
| **x8** | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | **5** |
| **x9** | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **7** |
| **x10** | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | **6** |
| **x11** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | **9** |
| **x12** | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **4** |

*Д*ля графа *G1 Σρ(e)=72,* список *ρ(e) =* {4, 5, 9, 6, 6, 7, 5, 6, 6, 5, 4, 9}

Для графа *G2 Σρ(x)=72,*  список *ρ(x) =* {4, 5, 9, 6, 6, 6, 5, 5, 7, 6, 9, 4}

1. Разобьем вершины обоих графов на классы по их степеням:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *ρ(e) = ρ(x) = 9* | *ρ(e) = ρ(x) = 7* | *ρ(e) = ρ(x) = 6* | *ρ(e) = ρ(x) = 5* | *ρ(e) = ρ(x) = 4* |
| **E** | e3, e12 | e6 | e4, e5, e8, e9 | e2, e7, e10 | e1, e11 |
| **X** | x3, x11 | x9 | x4, x5, x6, x10 | x2, x7, x8 | x1, x12 |

1. Из таблицы сразу можно заметить соответствие вершин графов:

|  |  |
| --- | --- |
| **E** | **X** |
| e6 | x9 |

Переберем всевозможные комбинации связей оставшихся вершин и получим соответствие:  
E X

e6 x9

e3 x3

e12 x11

e4 x4

e5 x5

e8 x6

e9 x10

e2 x2

e7 x7

e10 x8

e1 x1

e11 x12

Таким образом, можно сделать вывод о том, что графы G1 и G2 изоморфны.