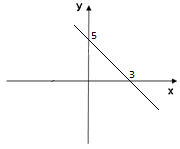
**Faculty of Faculty of Technologies**

**Engineering Mathematics I (Linear Algebra and Analytic Geometry)**

**2016-2017**

**Pre-Test**

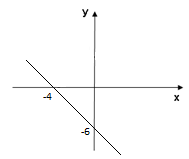
1. Let A ={-4, 0, 1, 5}, B ={-4, 1, 3}. Find: , , , , . **(1 point)**
2. How many three digit numbers can be formed from the digits 1, 3, 4, 5 and 8, if each digit can only be used once? How many of these are odd numbers? How many are greater than 250. **(1 point)**
3. Solve the linear system: **(1 point)**
4. Find the length of  median of the triangle with vertices ,  and . **(1 point)**
5. Find the area of the triangle whose vertices are the points A(1;2), B(3;-1), and C(4;4). **(1 point)**
6. Determine the scalar product of the vectors  და . **(1 point)**
7. Let given graph of line . Find value of  and  . **(1 point)**



1. Find the equation of the circle with given centre and radius centre , radius .**(1point)**
2. Find  such that vectors  and  are perpendicular. **(1point)**
3. Find the volume of a tetrahedral , if its vertices are: A(2;3;1), B(4;1;-2), C(6;3;7), and D(-5;-4;8). **(1point)**

**Post-Test**

1. Let A ={a, b, c, d, f, g} and B ={c, f, g, m, n}. Find: , , . **(1 point)**
2. How many three digit numbers can be formed from the digits 1,2,3,4,5 and 6, if each digit can only be used once? How many of these are odd numbers? How many are greater than 330. **(1 point)**
3. Find the point of intersection of the lines  და .**(1 point)**
4. Find the lengths of the medians of the triangle with vertices ,  and . **(1 point)**
5. Find the area of the triangle whose vertices are the points A(1;2), B(3;-1) and C(4;4). **(1 point)**
6. Determine the angle between the vectors  და .**(1 point)**
7. Let given graph of line  Find value of  and  . **(1 point)**



1. Find the equation of the circle with given centre and radius centre , radius .**(1point)**
2. Find  such that vectors  and  are perpendicular. **(1point)**
3. Find the volume of a tetrahedral , if its vertices are: , ,  and . **(1point)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Results** | | | | | | | | | | | | | | | | | | | | | |
|  | **Pre - test** | | | | | | | | | |  | **Post-test** | | | | | | | | | |
| N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |  | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |  | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |  | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
|  | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |  | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |