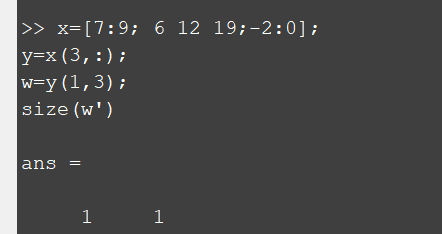
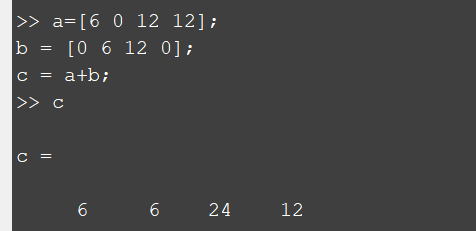
**CSU33081 Multiple Choice Answers**

Please enter your answers (A – E) and upload with your type-written solutions as a .docx file

Q1 Answer: D



Q2 Answer: C



As

Q3 Answer: D (See Q1 answer)

Q 4 Answer: E

Q 5 Answer: B

1: 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q 6 Answer: E

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R1

R2

R3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R1 = R1 x -1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R2 = R2 – 2xR1

R3 = R3 – 3xR1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R2 = R2 x 1/4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R1 = R1 + R2

R3 = R3 – 6xR2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R3 = R3 x 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

R1 = R1 – 2.25xR3

R2 = R2 + 1.75xR3

Q 7 Answer: D

|  |  |  |
| --- | --- | --- |
| 0 | 4 | 1 |
| 1 | 1 | 3 |
| 2 | -2 | 1 |

R1

R2

R3

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 3 |
| 0 | 4 | 1 |
| 2 | -2 | 1 |

R1 ⬄ R2

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 3 |
| 0 | 4 | 1 |
| 0 | -4 | -5 |

Pivot = 0/1 = 0

R3 = R3 – 2xR1

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 3 |
| 0 | 4 | 1 |
| 0 | 0 | -4 |

R3 = R3 + R2

|  |  |  |
| --- | --- | --- |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 2 | -1 | 1 |

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 3 |
| 0 | 4 | 1 |
| 0 | 0 | -4 |

L = U =

Forwards substitution from L:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 0 | 0 | 6 |
| 0 | 1 | 0 | 9 |
| 2 | -1 | 1 | -1 |

x1 = 6

x2 = 9

x3 = -1 – (2(6) – 9) = -4

Substitution into U:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 1 | 3 | 6 |
| 0 | 4 | 1 | 9 |
| 0 | 0 | -4 | -4 |

x1 = 6 – (3 – 2)) = 1

x2 = (9 – 1)/4 = 2

x3 = 1

x1 = 1, x2 = 2, x3 = 1

Q 8 Answer: E

The matrix is not diagonally dominant, and so doesn’t necessarily converge.

|  |
| --- |
| k = 1: x1 = (6 - (8.\*4 + 6\*5)) / 1 = -56  x2 = (-8 - (7.\*-56 + 1\*5)) / 3 = 126.333  x3 = (2 - (6.\*-56 + 7\*126.333)) / 12 = -45.528  k = 2: x1 = (6 - (8.\*126.333 + 6\*-45.528)) / 1 = -731  x2 = (-8 - (7.\*-731 + 1\*-45.528)) / 3 = 1719.343  x3 = (2 - (6.\*-731 + 7\*1719.343)) / 12 = -637.033  k = 3: x1 = (6 - (8.\*1719.343 + 6\*-637.033)) / 1 = -9926.542  x2 = (-8 - (7.\*-9926.542 + 1\*-637.033)) / 3 = 23371.608  x3 = (2 - (6.\*-9926.542 + 7\*23371.608)) / 12 = -8670.001 |

Q 9 Answer: B

LU Decomposition using Crout's method:

|  |  |  |
| --- | --- | --- |
| 2 | 0 | 0 |
| 4 | - | 0 |
| -2 | - | - |

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

L = U =

|  |  |  |
| --- | --- | --- |
| 2 | 0 | 0 |
| 4 | 6 | 0 |
| -2 | - | - |

|  |  |  |
| --- | --- | --- |
| 1 | 1.5 | -0.5 |
| 0 | 1 | 0.5 |
| 0 | 0 | 1 |

L = U =

|  |  |  |
| --- | --- | --- |
| 2 | 0 | 0 |
| 4 | 6 | 0 |
| -2 | 6 | -5 |

|  |  |  |
| --- | --- | --- |
| 1 | 1.5 | -0.5 |
| 0 | 1 | 0.5 |
| 0 | 0 | 1 |

L = U =

Forward substitution using L: Backwards substitution using U:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | 0 | 0 | 1 |
| 4 | 6 | 0 | 0 |
| -2 | 6 | -5 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 1.5 | -0.5 | 0.5 |
| 0 | 1 | 0.5 | 1 |
| 0 | 0 | 1 | 1 |

y11 = 0.5

x11 = 0.25

x12 = 0.5

x13 = 1

y12 = 1

y13 = 1

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | 0 | 0 | 0 |
| 4 | 6 | 0 | 1 |
| -2 | 6 | -5 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 1.5 | -0.5 | 0 |
| 0 | 1 | 0.5 | -0.5 |
| 0 | 0 | 1 | -0.6 |

y21 = 0

x21 = 0

x22 = -0.2

x23 = -0.6

y22 = -0.5

y23 = -0.6

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | 0 | 0 | 0 |
| 4 | 6 | 0 | 0 |
| -2 | 6 | -5 | 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 1.5 | -0.5 | 0 |
| 0 | 1 | 0.5 | 0.1 |
| 0 | 0 | 1 | -0.2 |

y31 = 0

x31 = -0.25

x32 = 0.1

x33 = -0.2

y32 = 1

y33 = -0.2

Final matrix:

|  |  |  |
| --- | --- | --- |
| 0.25 | 0 | -0.25 |
| 0.5 | -0.2 | 0.1 |
| 1 | -0.6 | -0.2 |

Q 10 Answer:

didn't finish