**CSU33081 Multiple Choice Answers**

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

Q 1 Answer: A

|  |
| --- |
| X=(1~=0)|(2>2)&(7<4) |

~ means a logical "not" in MATLAB, so the first part means "1 is not 0", which is a true statement.

| means a logical "or", so X will return true if either section is true. In the second section, & represents a logical "and", and the two statements either side of it are false, so the section is false.

As such, X is either true or false which, due to the logical or, returns true. Since 1 is the value for true in MATLAB, the value in X is 1.

Q2 Answer: D

|  |
| --- |
| p=[1 8 2];  r=roots(p); |

The array p represents the coefficients of a polynomial expression x2 + 8x + 2 when the function roots is applied to it. roots simpy finds the roots of the equation, which come out to the values -7.742 and -0.258, returned as a column vector. Hence the answer is D and not C, which is a row vector.

Q3 Answer: E

|  |
| --- |
| a=12/1\*15/1; b=a/a\*a; c=tand(30)+1/3; d=1+c; e=a-b\*c+d |

This is a series of expressions that take and modify a value.

* a is the value , which is 180
* b is divides and multiplies a by itself, which returns a again, as 180
* c gets the value of tan(30) in degrees and adds to is, which is
* d adds 1 to c, which is
* e is 180-180\*, which is 17.32096..., which results in answer E.

Q 4 Answer: C

| -7.0 13.0 -16.0 | | 1 |

A = | 13.0 -10.0 13.0 |, x1 = | -0.8 |

| -16.0 13.0 -7.0 | | 0.9 |

i = 1

| -31.799 | | -0.9725 |

A \* x1 => | 32.7 | / 32.7 => 32.7 | 1.0 | = x2

| -32.699 | | -1.0 |

i = 2

| 35.8075 | | 1.0 |

A \* x2 => | -35.6425 | / 35.8075 => 35.8075 | -0.9954 | = x3

| 35.56 | | 0.9931 |

i = 3

| -35.8298 | | 0.9983 |

A \* x3 => | 35.8643 | / -35.8919 => -35.8919 | -0.9992 | = x4

| -35.8919 | | 1.0 |

i = 4

| -35.9777 | | 1.0 |

A \* x4 => | 35.9699 | / -35.9777 => -35.9777 | -0.9998 | = x5

| -35.9624 | | 0.9996 |

i = 5

| -35.991 | | 0.9999 |

A \* x5 => | 35.9928 | / -35.9946 => -35.9946 | -0.9999 | = x6

| -35.9946 | | 1.0 |

i = 6

| -35.998 | | 1.0 |

A \* x6 => | 35.9977 | / -35.998 => -35.998 | -1.0 | = x7

| -35.9971 | | 1.0 |

i = 7

| -36.0 | | 1.0 |

A \* x7 => | 36.0 | / -36 => -36 | -1.0 | = x8

| -36.0 | | 1.0 |

Hence, the largest eigenvalue after 7 iterations is -36 and the largest eigenvector is (1, -1, 1)T.

Q 5 Answer: C

Sx = ∑Ti = 28

Sy = ∑Si = 41.18

Sxx = ∑Ti2 = 140

Sxy = ∑TiSi = 192.73

a1 = a = = 1.156301

a0 = b = = 1.01667

Q 6 Answer: A

Converting to linear form,

-->

Let and . Then, as is applied to all values,

Sx = ∑xi = 34

SY = ∑Yi = 5.26950

Sxx = ∑xi2 = 354

SxY = ∑xiYi = 29.71977

a0 = α = = 1.3980

a1 = β = = -0.050603

Q 7 Answer:

Converting to linear form,

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Let . Then,

SX = ∑Xi = 34

Sy = ∑yi = 5.26950

SXX = ∑Xi2 = 354

SXy = ∑Xiyi = 29.71977

a0 = α = = 1.9681

a1 = β = = 3.1486

Q 8 Answer: D

Q 9 Answer: E

Using Newton's Polynomial,

Q 10 Answer:

­­i = 1

­­i = 2

­­i = 3

Differentiating each equation,

­­i = 2

=>

­­i = 3

=>

Using these 8 equations, we can construct a matrix:

| 9 1 0 0 0 0 21 |

| 15 1 0 0 0 0 32 |

| 0 0 81 1 0 0 32 |

| 0 0 400 1 0 0 48 |

| 0 0 0 0 400 1 48 |

| 0 0 0 0 484 1 11 |

| 1 0 -30 -1 0 0 0 |

| 0 0 40 1 -40 -1 0 |

Which, using MATLAB, gives the coefficients

1.8 4.5 0.3 -6.4 6.6 -11.5 465.9 -4656.7

And the equations

, for

, for

, for

For x = t = 18, we use

Hence, the answer is E