Mth603 Solved MCQS for Final Term Exam

Exact solution of 2/3 is not exists.
TRUE
FALSE

The Jacobi's method is
A method of solving a matrix equation on a matrix that has _____ zeros along its main diagonal.

No
At least one

A 3 x 3 identity matrix have three and ____________eigen values.
Same
Different

Eigenvalues of a symmetric matrix are all _________ .
Real
Complex
Zero
Positive

The Jacobi iteration converges, if A is strictly diagonally dominant.
TRUE
FALSE

Below are all the finite difference methods EXCEPT ___________.

Jacobi's method
Newton's backward difference method
Stirlling formula
Forward difference method

If n x n matrices A and B are similar, then they have the same eigenvalues (with the same multiplicities).
TRUE
FALSE

If A is a nxn triangular matrix (upper triangular, lower triangular) or diagonal matrix, the eigenvalues of A are the diagonal entries of A.

TRUE
FALSE

Mth603 Solved MCQS for Final Term Exam

The characteristics polynomial of a 3x 3 Identity matrix is ____________, if x is the Eigen values of the given 3 x 3 identity matrix. Where symbol ^ shows power.

(X-1)^3
(x+1)^3
X^3-1
X^3+1

Two matrices with the same characteristic polynomial need not be similar.

TRUE
FALSE

Bisection method is a

Bracketing method
Open method

Regula Falsi means

Method of Correct position
Method of unknown position
Method of false position
Method of known position

Eigenvalues of a symmetric matrix are all ___________.
Select correct option:

Real
Zero
Positive
Negative

An eigenvector V is said to be normalized if the coordinate of largest magnitude is equal to zero.
Select correct option:

TRUE
FALSE

Exact solution of 2/3 is not exists.
Select correct option:

TRUE
FALSE

The Gauss-Seidel method is applicable to strictly diagonally dominant or symmetric _________ definite matrices A.
Select correct option:

Positive
Negative

Differences methods find the _________ solution of the system.
Select correct option:

Numerical
Analytical

The Power method can be used only to find the eigenvalue of A that is largest in absolute **value—we call this Eigenvalue the dominant eigenvalue of A.**
Select correct option:

TRUE
FALSE

The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its _________.

Select correct option:

Main diagonal
Last column
Last row
First row

If A is a nxn triangular matrix (upper triangular, lower triangular) or diagonal matrix , the eigenvalues of A are the diagonal entries of A. Select correct option:

TRUE
FALSE

A 3 x 3 identity matrix have three and different Eigen values.
Select correct option:

TRUE
FALSE

Newton Raphson method falls in the category of

Bracketing method
Open Method
Iterative Method
Indirect Method

Newton Raphson method is also known as
Tangent Method
Root method
Open Method
Iterative Method

Secant Method uses values for approximation

1
3

2
4

Secant Method is than bisection method for finding root
Slow
Faster

In Newton Raphson method

Root is bracketed
Root is not bracketed

Regula falsi method and bisection method are both

Convergent
Divergent

In bisection method the two points between which the root lies are

Similar to each other
Different
Not defined
Opposite

In which methods we do not need initial approximation to start
Indirect Method
Open Method
Direct Method
Iterative Method

Root may be

Complex
Real
Complex or real
None

In Regula falsi method we choose points that have signs

2 points opposite signs
3 points opposite signs
2 points similar signs
None of the given

In a bounded function values lie between
1 and -1
1 and 2

0 and 1
0 and -2

Newton Raphson method is a method which when it leads to division of number close to zero
Diverges
Converges

Which of the following method **is modified form of Newton Raphson Method**?
Regula falsi method
Bisection method
Secant method
Jacobi's Method

Which 1 of the following is generalization of Secant method?
Muller's Method
Jacobi's Method
Bisection Method
N-R Method

Secant Method needs starting points

2
3
4
1
Near a simple root Muller's Method converges than the secant method

Faster
Slower

If S is an identity matrix, then

$S^{-1} = S$
$S^{t} = S$
$S^{-1} = S^{t}$
All are true

If we retain r+1 terms in Newton's forward difference formula, we obtain a polynomial of degree ---- agreeing with y_x **at** $x_{0,} x_1, \ldots, x_r$

r+2

r+1
R
R-1

P in Newton's forward difference formula is defined as

$p = (\frac{x - x_0}{h})$

$p = (\frac{x + x_0}{h})$

$p = (\frac{x + x_n}{h})$

$p = (\frac{x - x_n}{h})$

Octal numbers has the base

10
2
8
16

Newton's divided difference interpolation formula is used when the values of the independent variable are

Equally spaced

Not equally spaced

Constant
None of the above

Given the following data

x	0	1	2	4
$f(x)$	1	1	2	5

Value of $f(2,4)$ is

1.5

3
2

1

If $y(x)$ is approximated by a polynomial $p_n(x)$ of degree n then the error is given by

$\varepsilon(x) = y(x) + P_n(x)$

$\varepsilon(x) = y(x) - P_n(x)$

$\varepsilon(x) = y(x) \times P_n(x)$

$\varepsilon(x) = P_n(x) + y(x)$

Let I denotes the closed interval spanned by $x_0, x_1, x_2, x_3, x_4, x_5, x_6, x_7, \overline{x}$. Then $F(x)$ vanishes ------times in the interval I.

N-1
N+2
N
N+1

Differential operator in terms of forward difference operator is given by

$D = \frac{1}{h}(\Delta + \frac{\Delta^2}{2!} + \frac{\Delta^3}{3!} + \frac{\Delta^4}{4!} + \frac{\Delta^5}{5!} + ...)$

$D = \frac{1}{h}(\Delta + \frac{\Delta^2}{2} + \frac{\Delta^3}{3} + \frac{\Delta^4}{4} + \frac{\Delta^5}{5} + ...)$

$D = \frac{1}{h}(\Delta - \frac{\Delta^2}{2} + \frac{\Delta^3}{3} - \frac{\Delta^4}{4} + \frac{\Delta^5}{5} - ...)$

$D = \frac{1}{h}(\Delta - \frac{\Delta^2}{2!} + \frac{\Delta^3}{3!} - \frac{\Delta^4}{4!} + \frac{\Delta^5}{5!} - ...)$

Finding the first derivative of $f(x)$ at x =0.4 from the following table:

x	0.1	0.2	0.3	0.4
$f(x)$	1.10517	1.22140	1.34986	1.49182

Mth603 Solved MCQS for Final Term Exam

Differential operator in terms of ----------------will be used.

Forward difference operator
Backward difference operator
Central difference operator
All of the given choices

For the given table of values

x	0.1	0.2	0.3	0.4	0.5	0.6
$f(x)$	0.425	0.475	0.400	0.452	0.525	0.575

$f'(0.1)$, using two-point equation will be calculated as.............

-0.5
0.5
0.75
-0.75

In Simpson's 1/3 rule, $f(x)$ is of the form

$ax+b$

- ax^2+bx+c
- ax^3+bx^2+cx+d
- $ax^4+bx^3+cx^2+dx+e$

While integrating $I=\int_a^b f(x)dx$**,** h**, width of the interval, is found by the formula-----.**

$\frac{b-a}{n}$

$\frac{b+a}{n}$

$\frac{a-b}{n}$

None of the given choices

To apply Simpson's 1/3 rule, valid number of intervals are.....

7
8
5
3

For the given table of values

x	0.1	0.2	0.3	0.4	0.5	0.6
$f(x)$	0.425	0.475	0.400	0.452	0.525	0.575

$f^{//}(0.2)$ **, using three-point equation will be calculated as ……**

17.5
12.5
7.5
-12.5

To apply Simpson's 1/3 rule, the vusolutions number of intervals in the following must be

2
3
5
7

To apply Simpson's 3/8 rule, the number of intervals in the following must be

10
11
12
13

If the root of the given equation lies between a and b, then the first approximation to the root of the equation by bisection method is ……

$\frac{(a+b)}{2}$

$\frac{(a-b)}{2}$

$\frac{(b-a)}{2}$

None of the given choices

…………lies in the category of iterative method.

Bisection Method
Regula Falsi Method
Secant Method
All of the given choices

For the equation $x^3+3x-1=0$**, the root of the equation lies in the interval……**

(1, 3)
(1, 2)
(0, 1)
(1, 2)

Rate of change of any quantity with respect to another can be modeled by

An ordinary differential equation
A partial differential equation

A polynomial equation

None of the given choices

If

$\frac{dy}{dx} = f(x, y)$

Then the integral of this equation is a curve in

None of the given choices

Xt-plane
Yt-plane
Xy-plane

In solving the differential equation

$y' = x + y \; ; \; y(0.1) = 1.1$

$h = 0.1$, **By Euler's method** $y(0.2)$ **is calculated as**

1.44
1.11
1.22
1.33

In second order Runge-Kutta method

k_1 is given by

$k_1 = hf(x_n, y_n)$

$k_1 = 2hf(x_n, y_n)$

$k_1 = 3hf(x_n, y_n)$

None of the given choices

In fourth order Runge-Kutta method, k_2 is given by

$k_2 = hf(x_n + \frac{h}{2}, y_n + \frac{k_1}{2})$

$k_2 = hf(x_n + \frac{h}{3}, y_n + \frac{k_1}{3})$

$k_2 = hf(x_n - \frac{h}{3}, y_n - \frac{k_1}{3})$

$k_2 = hf(x_n - \frac{h}{2}, y_n - \frac{k_1}{2})$

In fourth order Runge-Kutta method, k_4 is given by

$k_3 = hf(x_n + 2h, y_n + 2k_3)$

$k_3 = hf(x_n - h, y_n - k_3)$

$k_3 = hf(x_n + h, y_n + k_3)$

None of the given choices

Adam-Moulton P-C method is derived by employing

Newton's backward difference interpolation formula
Newton's forward difference interpolation formula
Newton's divided difference interpolation formula
None of the given choices

The need of numerical integration arises for evaluating the definite integral of a function that has no explicit ______________ or whose antiderivative is not easy to obtain

Derivatives
Antiderivative

If $|A| \neq 0$ then system will have a

Definite solution
Unique solution
Correct solution
No solution

If $|A| = 0$ then

There is a unique solution
There exists a complete solution
There exists no solution
None of the above options

Direct method consists of method
2
3
5
4

Mth603 Solved MCQS for Final Term Exam

We consider Jacobi's method Gauss Seidel Method and relaxation method as
Direct method
Iterative method
Open method
All of the above

In Gauss Elimination method Solution of equation is obtained in
3 stages
2 stages
4 stages
5 stages

Gauss Elimination method fails if any one of the pivot values becomes
Greater
Small
Zero
None of the given

Changing the order of the equation is known as

Pivoting
Interpretation

Full pivoting is than partial pivoting
Easy
More complicated

The following is the variation of Gauss Elimination method

Jacobi's method
Gauss Jordan Elimination method

Courts reduction method is also known as Cholesky Reduction method
True
False

Jacobi's method is also known as method of Simultaneous displacement
True
False
Gauss Seidel method is also **known as method of Successive displacement**
False
True

Mth603 Solved MCQS for Final Term Exam

In Jacobi's method approximation calculated is used for
Nothing
Calculating the next approximation
Replaced by previous one
All above

In Gauss Seidel method approximation calculated is replaced by previous one
True
False

Relaxation method is derived by
South well
Not defined

Power method is applicable for only
Real metrics
Symmetric
Unsymmetrical
Both symmetric and real

The process of eliminating value of y for intermediate value of x is know as interpolation
True
False