First Exam Sheet

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| Chapter 2 | |
| ***The Bisection Method of Bolzano*** | 1: Start with initial interval    2: Choose a midpoint  3: analyze the possibilities |
| # of needed iterations to get |  |
| Termination Criteria |  |
|  |  |
| ***False position method*** |  |
| Termination Criteria | 1-  2- , |
|  |  |
| ***Newton-Raphson Method*** |  |
| Speed of Convergence |  |
| Simple root |  |
| Multiple root |  |
|  |  |
| ***Accelerated Newton Iteration for Multiple Roots*** |  |
| Speed of convergence | Modify Newton’s method to converge faster. Become quadratic at multiple root |
|  |  |
| ***Secant Method*** |  |
| Speed of convergence |  |

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| Chapter 3 | |
| ***Back substitution*** | =  =  = |
|  |  |
| ***Gaussian Elimination and Pivoting*** |  |
| Transformation | Interchange, Scaling and  Replacement |
|  | -  coefficient / pivot |
|  |  |
| ***Jacobi Iteration***  =  =  = | |
|  |  |
| ***Gauss-Seidel Iteration***  =  =  = | |
|  |  |
| ***Convergence*** | For matrix  || >  for   * example, 3x3 matrix:   || > ||+|| |
|  |  |

Chapter 4

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| ***Taylor Polynomial Approximation*** | =  ,where between |
| ***Lagrange Approximation*** | =  = |
| ***Newton Polynomials*** | + + ()  () |