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|  | {{method}} |  |
| * Problem Statement | For the system of nonlinear equations: | |
| * Requirements | Use **Newton-Raphson method** to determine the roots of system .  Given the initial guess of {{x0}} and {{y0}}, Continue for {{iteration}} iterations or until the approximate error {{approximate}} | |
| * Solution:   The formulas of Newton-Raphson for a system of nonlinear equations:  The Jacobean matrix is given as:     1. For the first iteration     Solving for , we get  Y=      The 1st iteration doesn’t have either nor , as there isn’t a previous approximation.     1. For the second iteration         Solving for , we get  Y=           1. For the third iteration         Solving for , we get  Y=        Then, the root of the function after achieving the required conditions is :    {{xreal}}  {{yreal}}  And so on for the rest iterations until reaching a termination condition, as the following table: | | |