ProgrammingAssignment1.m

% Computes the value of 21^1/3 by

%   4 unique fixed point iteration methods.

% User input

prompt = 'Enter p0: ';

p0 = input(prompt);

% Solve A first

problemNum = 'A';

funct = @problemA;

% Solves all 4 of the problems

endSolve = false;

while (~endSolve)

    % Reset the initial variables

    previousP = p0;

    pCount = 0;

    stop = false;

    % Solve the current problem

    while (~stop)

        currentP = funct(previousP);

        pCount = pCount + 1;

        % End if the first 6 sig figs are equal

        if (strcmp(num2str(currentP,6),num2str(previousP,6)))

            stop = true;

        end

        previousP = currentP;

    end

    disp(strcat(problemNum,') p',int2str(pCount),': ',num2str(currentP,5)))

    % Set funct to the next problem

    if (strcmp(problemNum,'A'))

        funct = @problemB;

        problemNum = 'B';

    elseif (strcmp(problemNum,'B'))

        funct = @problemC;

        problemNum = 'C';

    elseif (strcmp(problemNum,'C'))

        funct = @problemD;

        problemNum = 'D';

    else

        endSolve = true;

    end

end

ProblemA.m

% The fixed point function for problem A

function y = problemA(x)

    y = (20\*x+21/(x^2))/21;

end

ProblemB.m

% The fixed point function for problem B

function y = problemB(x)

    y = x - ((x^3-21)/(3\*(x^2)));

end

ProblemC.m

% The fixed point function for problem C

function y = problemC(x)

    y = x - ((x^4 - 21\*x)/(x^2 - 21));

end

ProblemD.m

% The fixed point function for problem D

function y = problemD(x)

    y = (21/x)^(1/2);

end

Transcript of Running the Program in Matlab

>> ProgrammingAssignment1

Enter p0: 1

A) p63:2.7589

B) p8:2.7589

C) p2:0

D) p23:2.7589