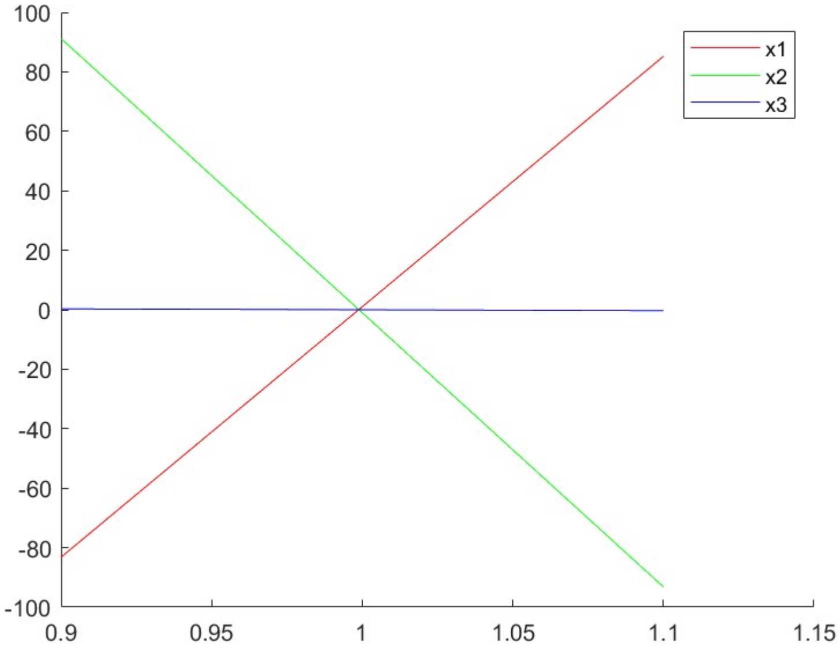
```
%% Class 3 classdef
set_3
methods(Static)
    %% Problem 1: Secant Method
        %
        % * input command: set_3.secant_method(13, 16, .001)
        % * output: 14.2325
        %

        function [sol] = secant_method(x_p, x_n, err_acc)
            error = abs(x_n- x_p) / x_n;
            function[y] = fxn(x)

                y = atan(exp(sin(1 / (x + 20)))) - .8;

            end




             while (error > err_acc)
            x = [x_p x_n];
            f = [fxn(x_n) -fxn(x_p)]';
            sol = (x*f) / (f(1) + f(2));
            error = abs(x_n- x_p) / x_n;
                x_p = x_n;
                x_n = sol;

            end

        end
        %% Problem 2: Fixed Point
        %
        % * input command: set_3.fixed_point(3, .001)
        % * output: 2.5222
        %

        function [x_root] = fixed_point(x_0, err_accept)

            error = 100;

            % If I understand the function's alg correctly.  We must solve
            % for x using the highest degree polynomial of x since it will
            % create a decreasing funciton as x, in a particular set of
            % directions, increases so solving for x = .5( x^3 - 11) and
            % x = (2*x + 11) / (x^2) could cause issues
function y=gxn(x)

                y = (2*x + 11)^ (1/3);
        end



        while (error > err_accept)
           x_root = gxn(x_0);

           error = abs(x_root - x_0) / x_root;

            x_0 = x_root;

        end

        x_root = x_0;
end


     %% Problem 3: Second Dimension Error
% * input command:
     % >>     b2 = .9:.01:1.1;          %
>>    set_3.solution_plot(b2)          % *
output:
     %
     %
     % <<../../sub/p3.png>>
     %
     %
     function solution_plot(b2)

         x1 = -841 + 842 * b2;
        x2 = 921 - 922 * b2;
        x3 = 3 - 3 * b2;

        f1 = figure(1);
hold on


        plot(b2, x1, '-r');

        plot(b2, x2, '-g');

        plot(b2, x3, '-b');

        legend("x1", "x2", "x3");

        hold off
```

```
            %uiwait(f1);

        end
end

end
```


100
80
60
40
20
0
-20
-40
-60
-80
-100
0.9
0.95
1
1.05
1.1
1.15
x1
x2
x3