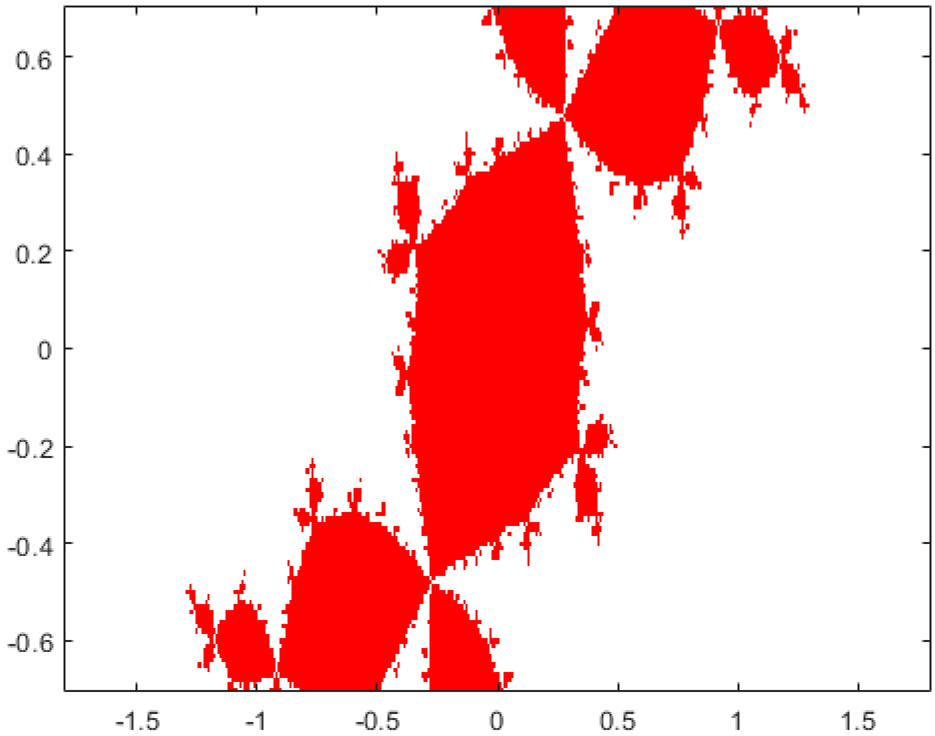
```
%Part Two
%Filled Julia Set c=.123-.745i
% if |z|<2 then z is a member of the approximate Julia set, plots
 (x,y) in
% the Julia set color otherwise z is outside the Julia set, plot (x,y)
 in
% the outside color
%Scale, rotation and translation can be altered by appropriately
 modifying
%the input x and y values into the initial complex number z.
fixpt1 = (1 + sqrt(6))/2;    %These are the fixed pts.
fixpt2 = (1 - sqrt(6))/2;

colormap([1 0 0; 1 1 1]);    %Points numbered 1 (inside) will be
 colored red;
                             % those numbered 2 (outside) will be
 white.
M = 2*ones(141,361);         %Initialize array of point colors to 2
 (white).

for j=1:141,                 %Try init vals with imaginary parts btwn
    y = -.7 + (j-1)*.01;     %   -0.7 and -.7
    for i=1:361,             %and with real parts btwn
        x = -1.8 + (i-1)*.01; %   -1.8 and 1.8
        z = x +1i*y;
        phi=@(z) z^2-.123-1i*.745;
        %1i is the MATLAB symbol for sqrt(-1)
        zk = z;
        iflag1 = 0;           %iflag1 and iflag2 count the number of
 iterations
        iflag2 = 0;           %    when a root is within 1.e-6 of a
 fixed pt
        kount = 0;            %kount is the total number of iterations

        while kount < 100 & abs(zk) < 2 & iflag1 < 5 & iflag2 < 5,
            kount = kount+1;
            zk = phi(zk);     %This is the fixed pt iteration.

            err1 = abs(zk-fixpt1);  %Test for convergence to fixpt1.
            if err1 < 1.e-6, iflag1 = iflag1 + 1; else, iflag1 =
 0; end;

            err2 = abs(zk-fixpt1); %Test for convergence to fixpt2.
            if err2 < 1.e-6, iflag2 = iflag2 + 1; else, iflag2 =
 0; end;

        end
        if iflag1 >= 5 | iflag2 >= 5 | kount >= 100, %If orbit is
 bounded, set
            M(j,i) = 1;
        end;
    end;
```

```
end;

image([-1.8 1.8],[-.7 .7],M), %This plots the results.
axis xy %If you don't do this, vertical axis is inverted
```



Published with MATLAB® R2019b