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In[1]:= f1 = x ^ 3 + y ^ 3 - 2 x y;
        f2 = x ^ 2 + y ^ 3 - 1;

In[3]:= {r1, r2, r3} = {x, y} /. Solve[{f1 == 0, f2 == 0}, {x, y}, Reals] // N
Out[3]:= {{-0.961449, 0.422868}, {0.480254, 0.91631}, {0.933563, 0.504571}}

In[4]:= jac = D[{f1, f2}, {{x, y}}];

In[5]:= newton[{x0_, y0_}] := ({x, y} - Inverse[jac].{f1, f2}) /. {x -> x0, y -> y0}

In[16]:= barva[{x0_, y0_}] := (n = 1; xy = {x0, y0}; e = 10^-9; While[
    xy = newton[xy];
    d1 = Norm[xy - r1]; d2 = Norm[xy - r2]; d3 = Norm[xy - r3];
    (Min[d1, d2, d3] >= e) && (n++) < 20];
    b = Black;
    If[d1 < e, b = Red];
    If[d2 < e, b = Green];
    If[d3 < e, b = Blue];
    b);

In[17]:= barva[{1.3, 1.5}]
Out[17]:= RGBColor[0, 0, 1]

In[23]:= ArrayPlot[Table[barva[{xw, yw}], {xw, -3.0021, 3, 0.01}, {yw, -3.0062, 3, 0.01}]]

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Out[23]=

