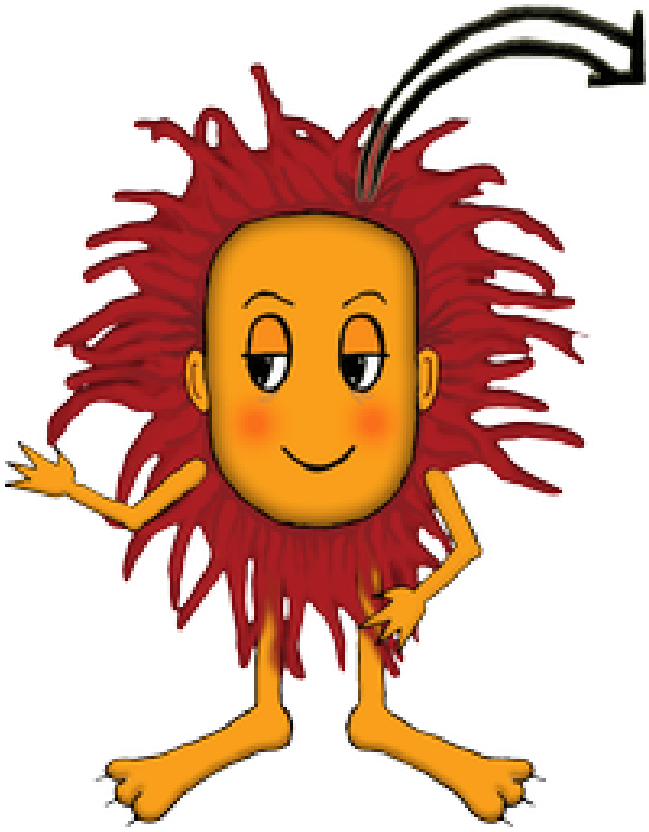
Velika logična pošast



Ničle kvadratne funkcije

Dana je kvadratna funkcija kompleksne spremenljivke

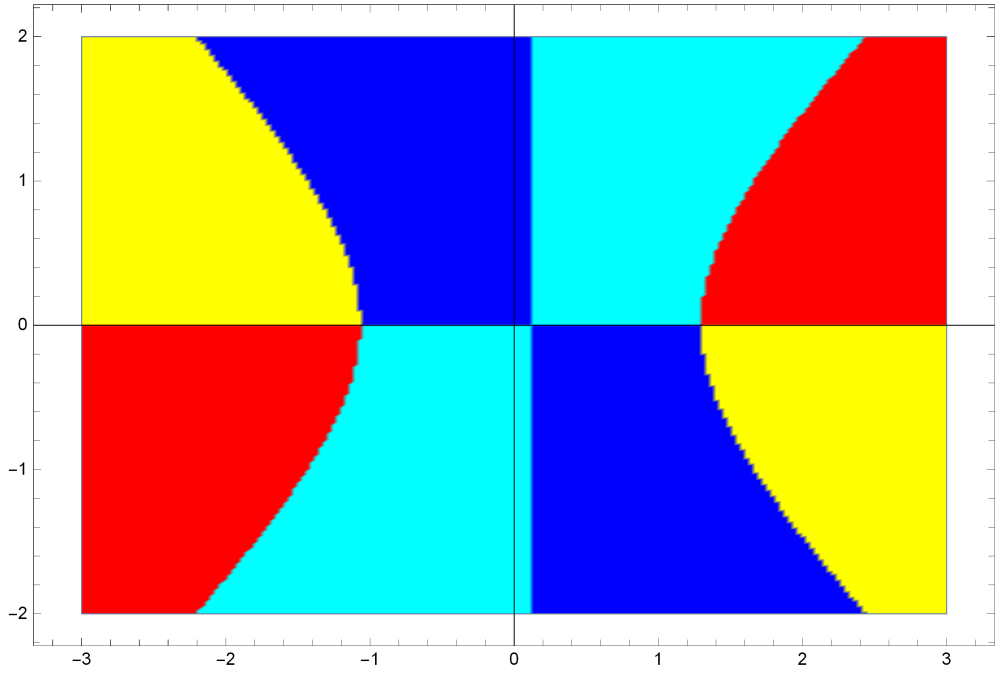
$w=f(z)=z^2+pz+q,$

kjer sta p in q realni števili.

Kompleksna ravnina je pobarvana, tako da je pri $Re[w]\geq 0$ in $Im[w]\geq 0$ rdeča barva
pri $Re[w]\geq 0$ in $Im[w]\geq 0$ rdeča barva,
pri $Re[w]\geq 0$ in $Im[w]<0$ rumena barva,
pri $Re[w]\leq 0$ in $Im[w]\geq 0$ cijanidna barva in
pri $Re[w]\leq 0$ in $Im[w]<0$ modra barva,
Oceni kvadratni koren na eno do dve decimalki natančno.

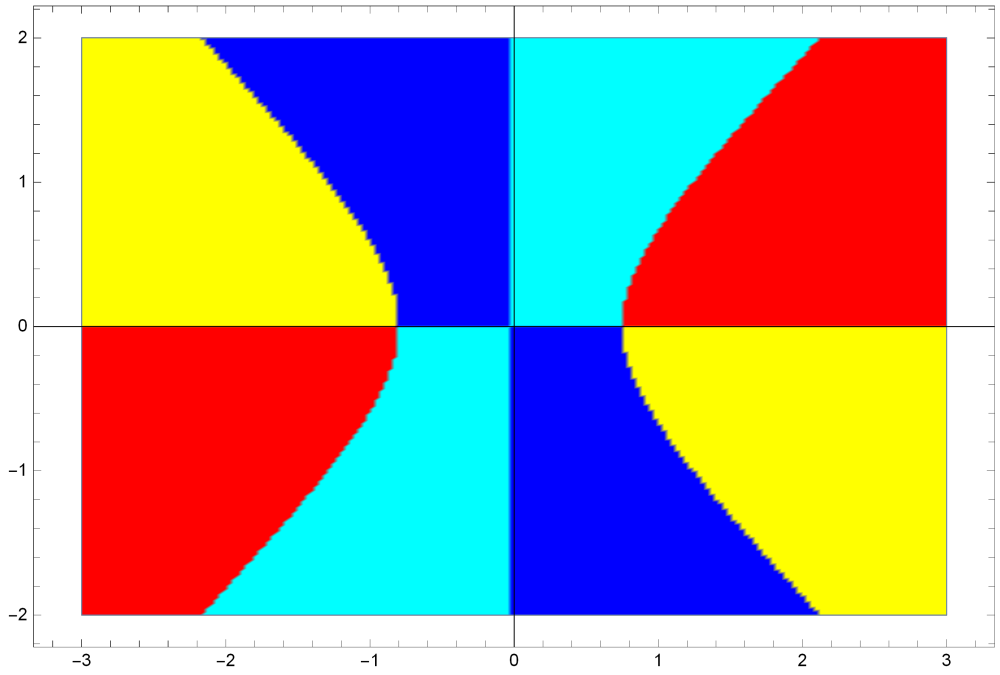
1.

$w(z) = z^2 - 0.23\,z - 1.38$



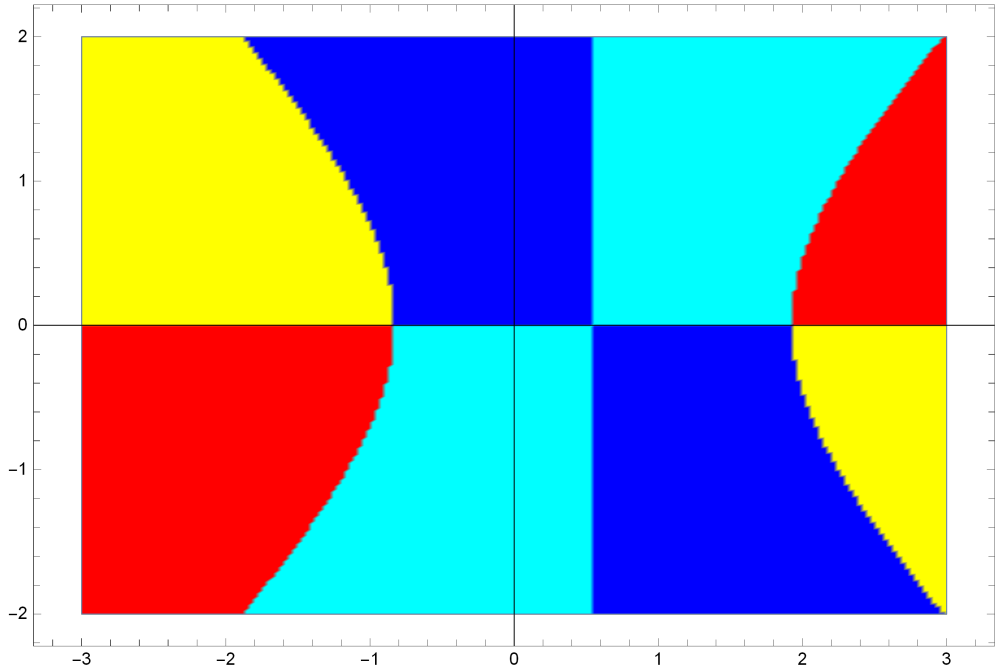
2.

$w(z) = z^2 + 0.05\,z - 0.6$



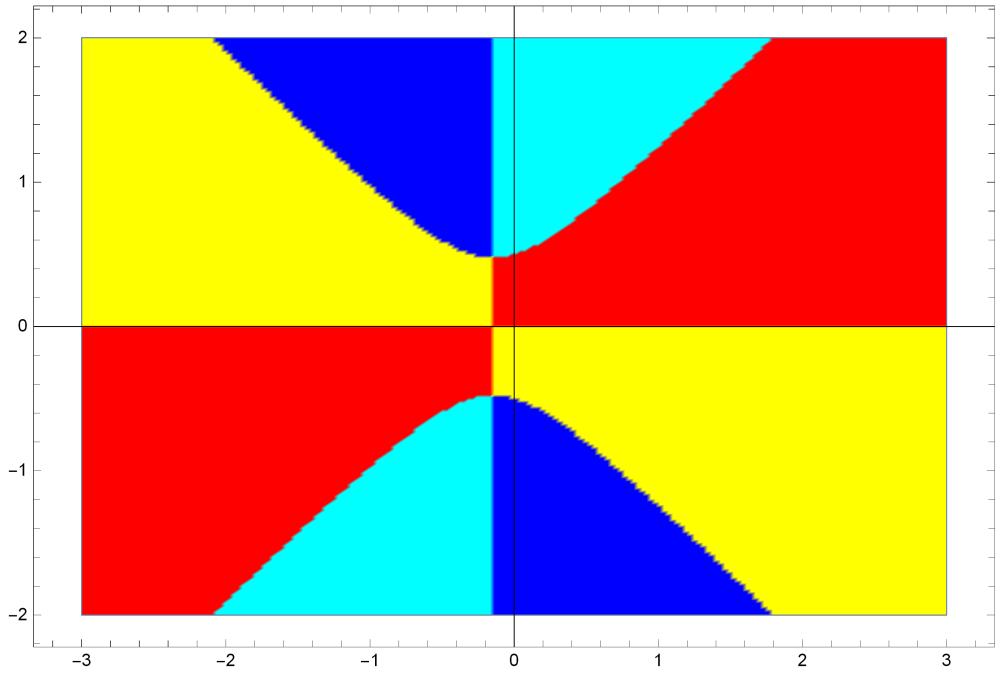
3.

$w(z) = z^2 - 1.09\,z - 1.6$



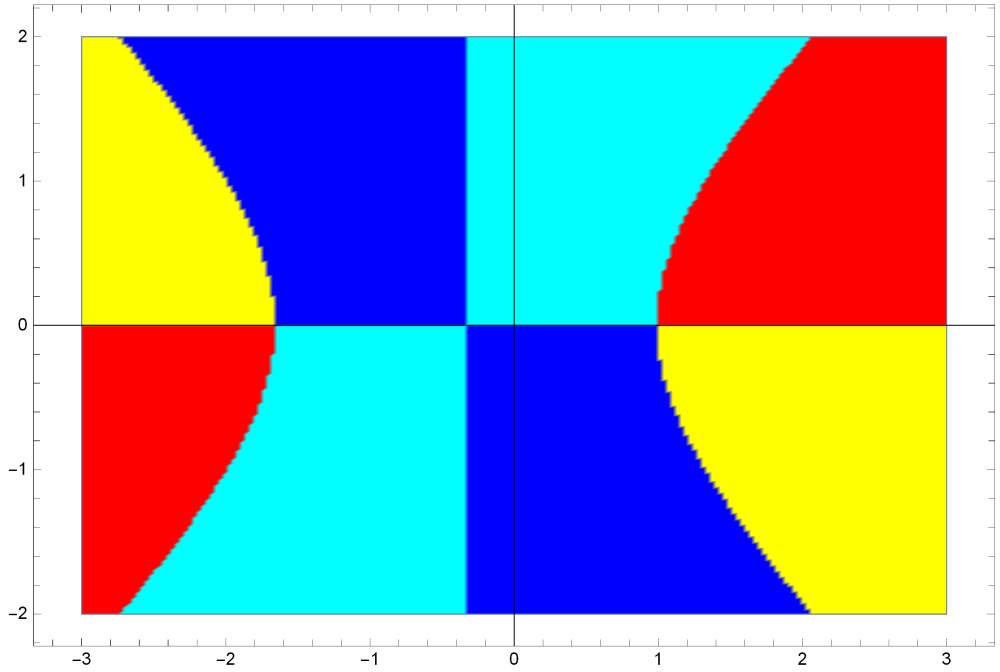
4.

$w(z) = z^2 + 0.3\,z + 0.25$



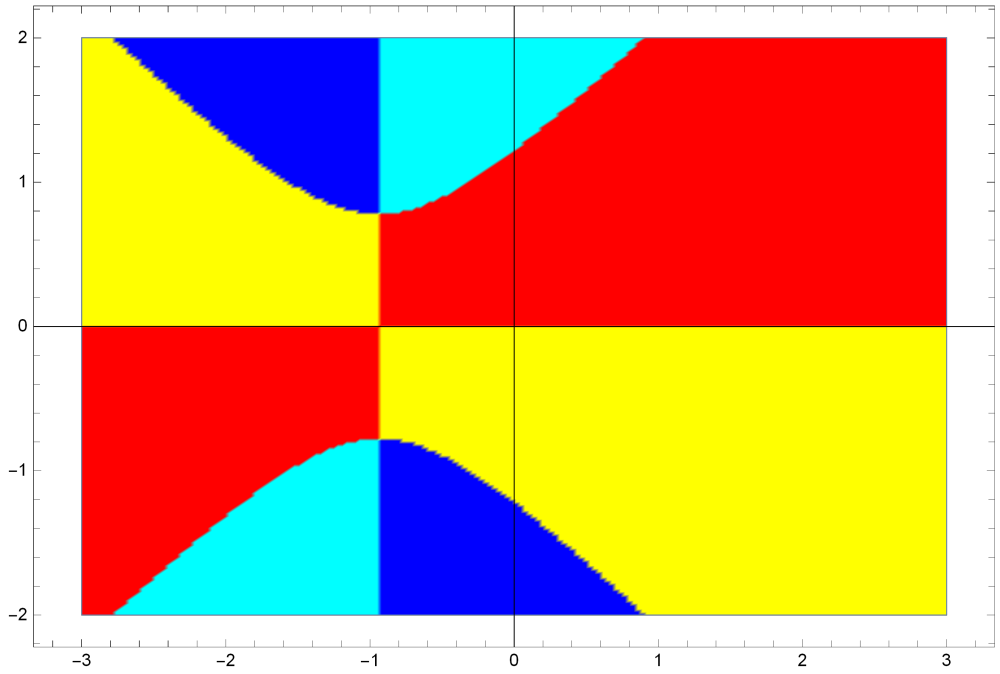
5.

$w(z) = z^2 + 0.67\,z - 1.64$



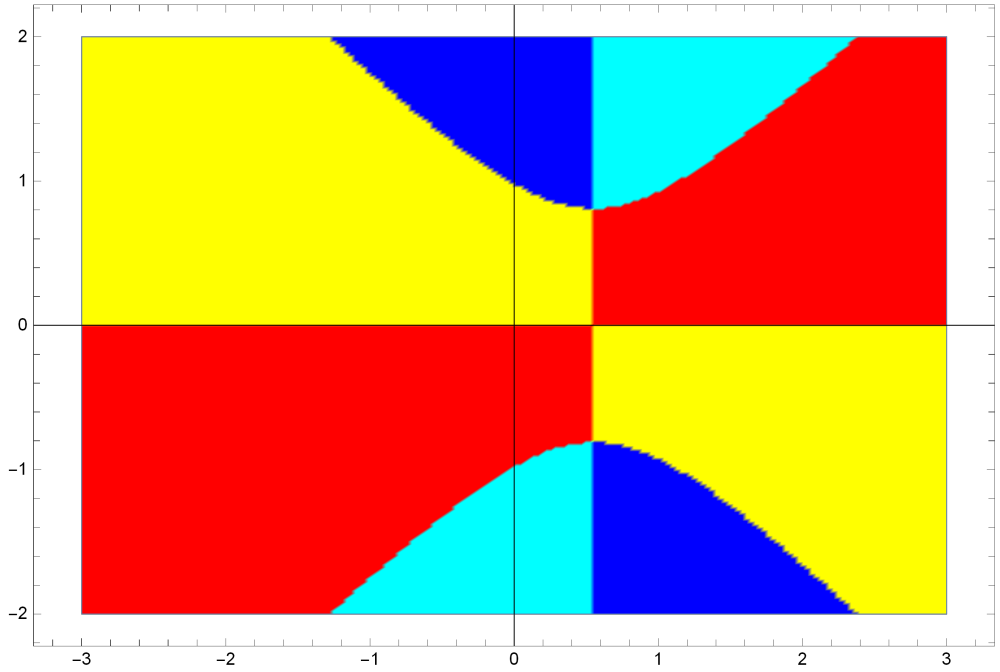
6.

$w(z) = z^2 + 1.88\,z + 1.49$



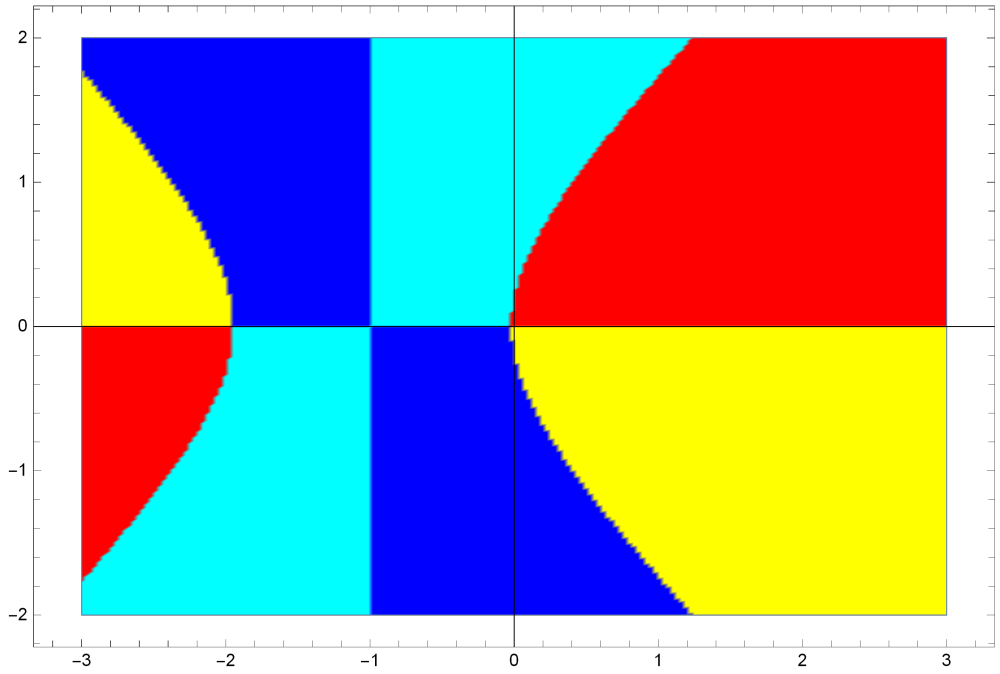
7.

$w(z) = z^2 - 1.1\,z + 0.96$



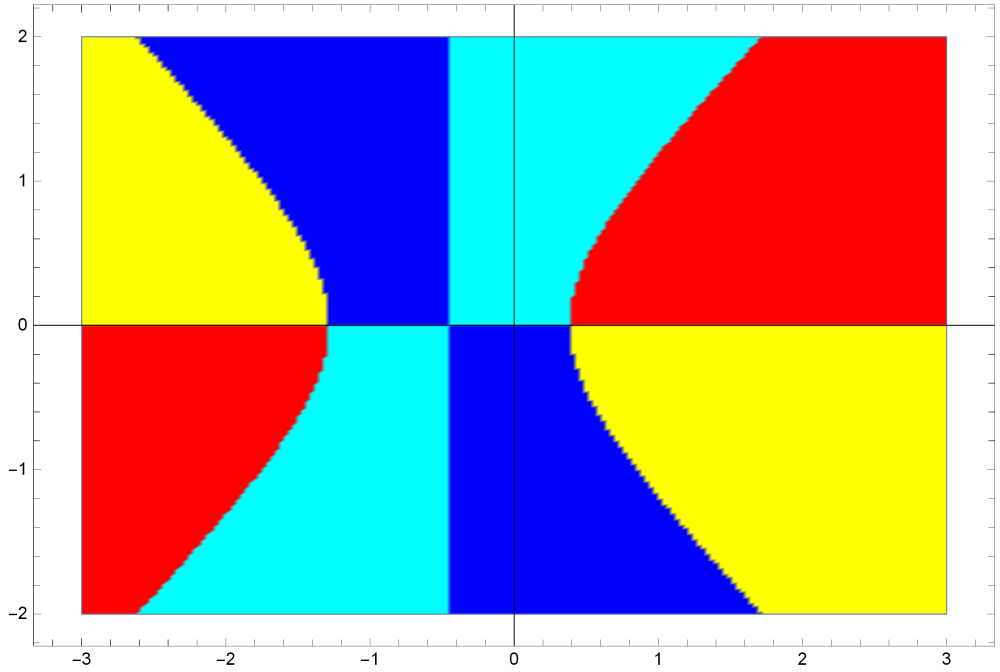
8.

$w(z) = z^2 + 1.97\,z + 0.04$



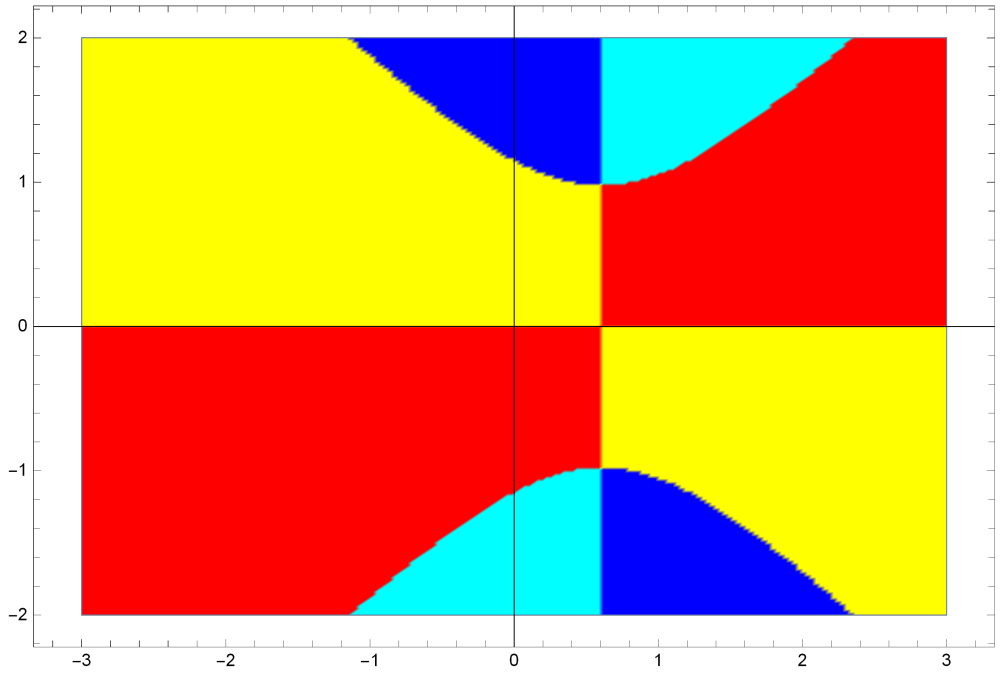
9.

$w(z) = z^2 + 0.9\,z - 0.49$



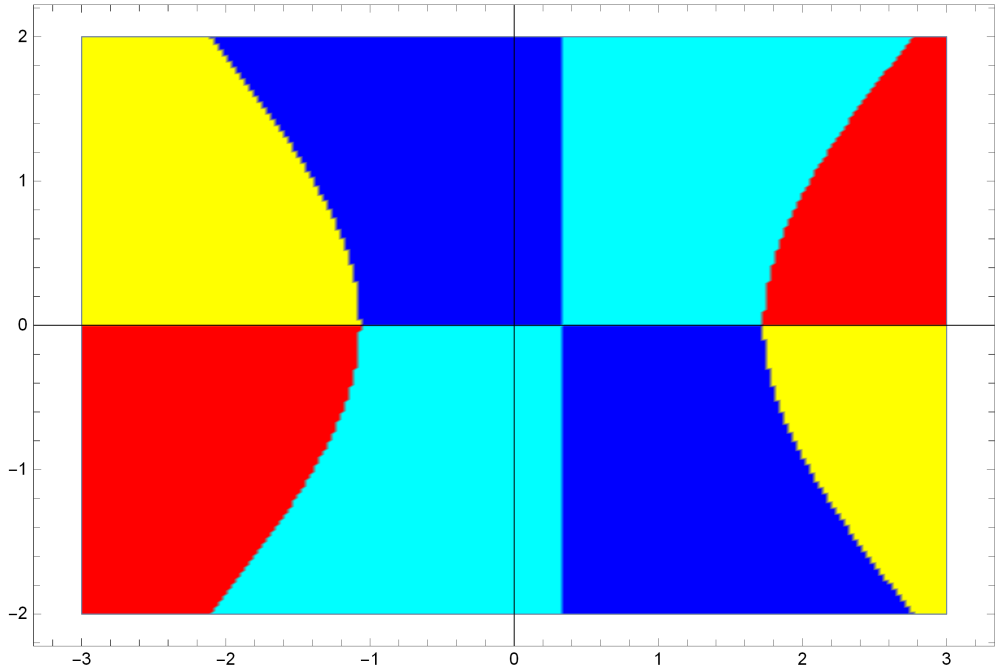
10.

$w(z) = z^2 - 1.21\,z + 1.32$



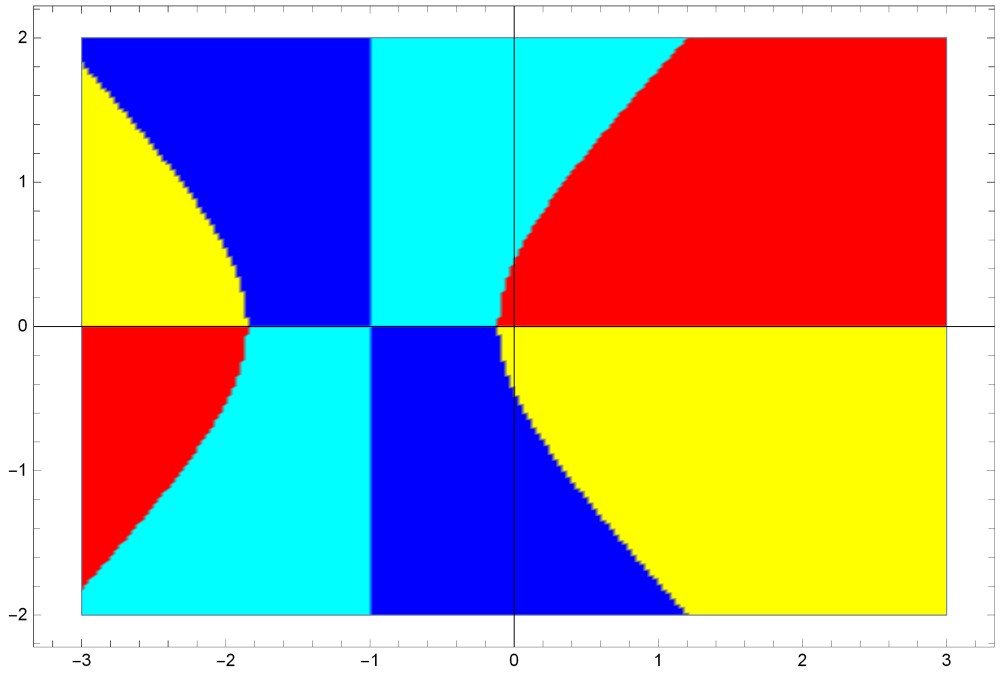
11.

$w(z) = z^2 - 0.66\,z - 1.85$



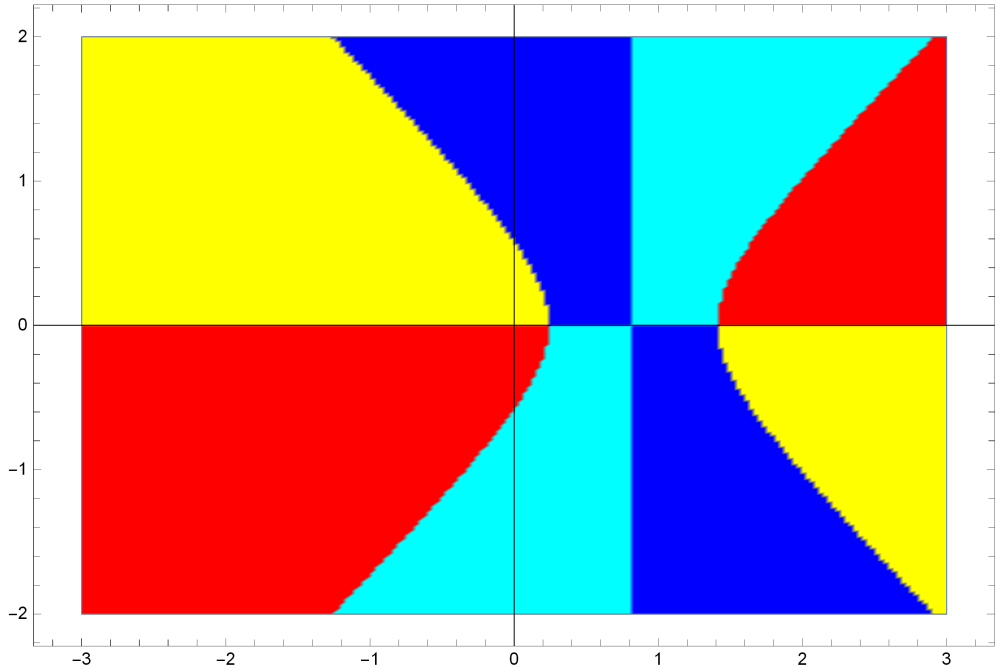
12.

$w(z) = z^2 + 1.96\,z + 0.2$



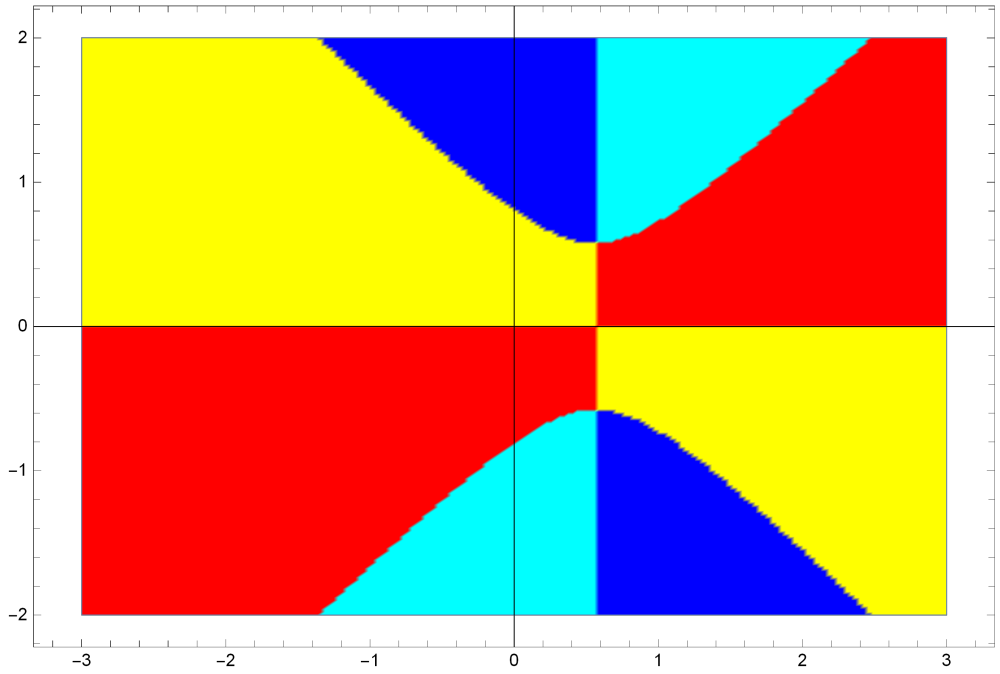
13.

$w(z) = z^2 - 1.65\,z + 0.34$



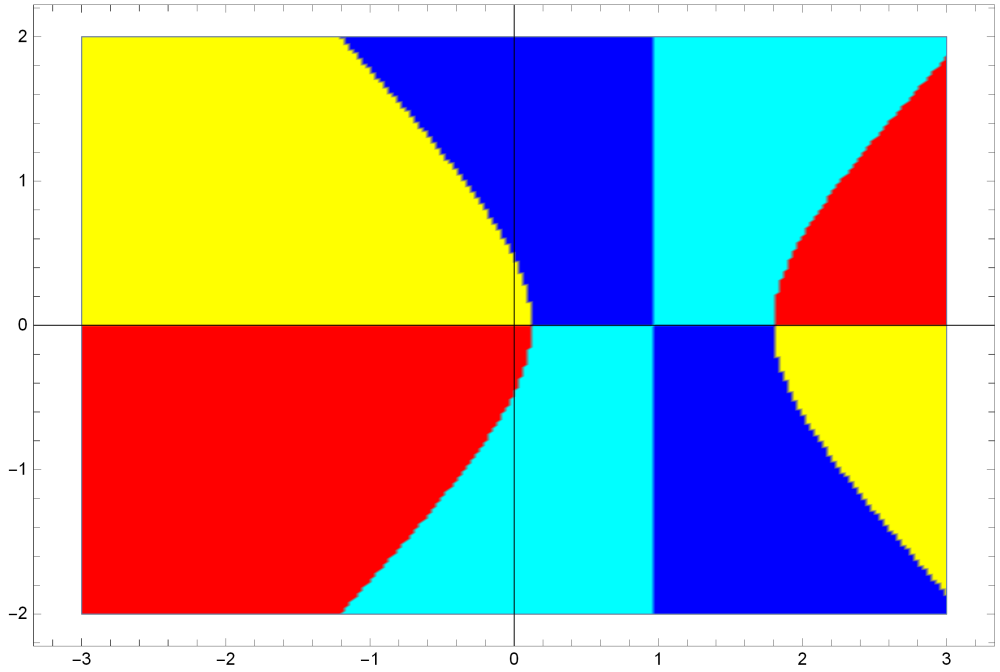
14.

$w(z) = z^2 - 1.12\,z + 0.65$



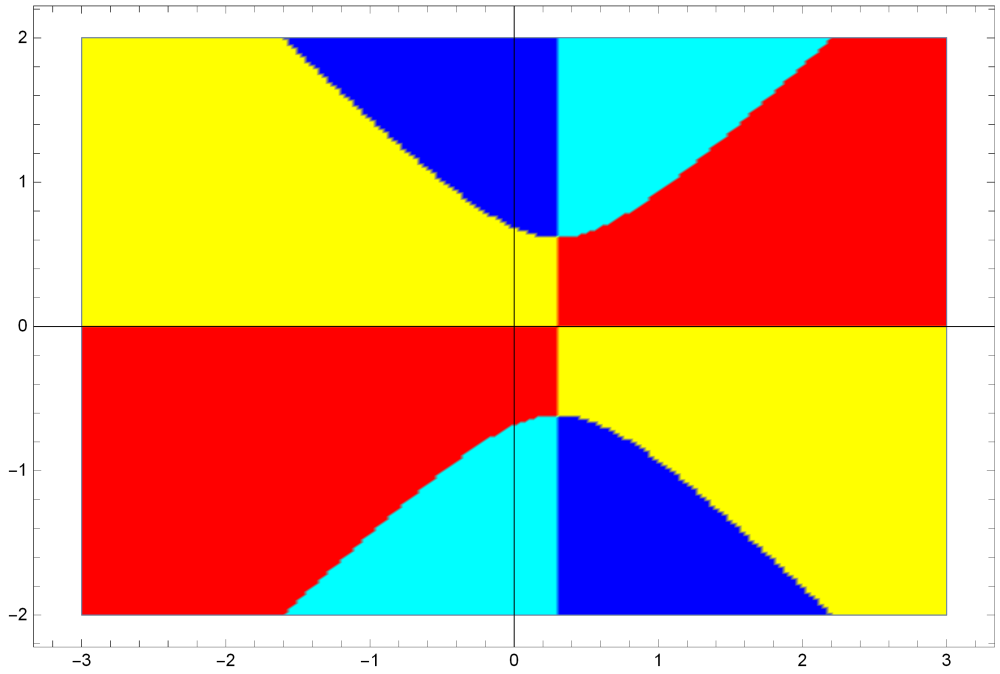
15.

$w(z) = z^2 - 1.92\,z + 0.22$



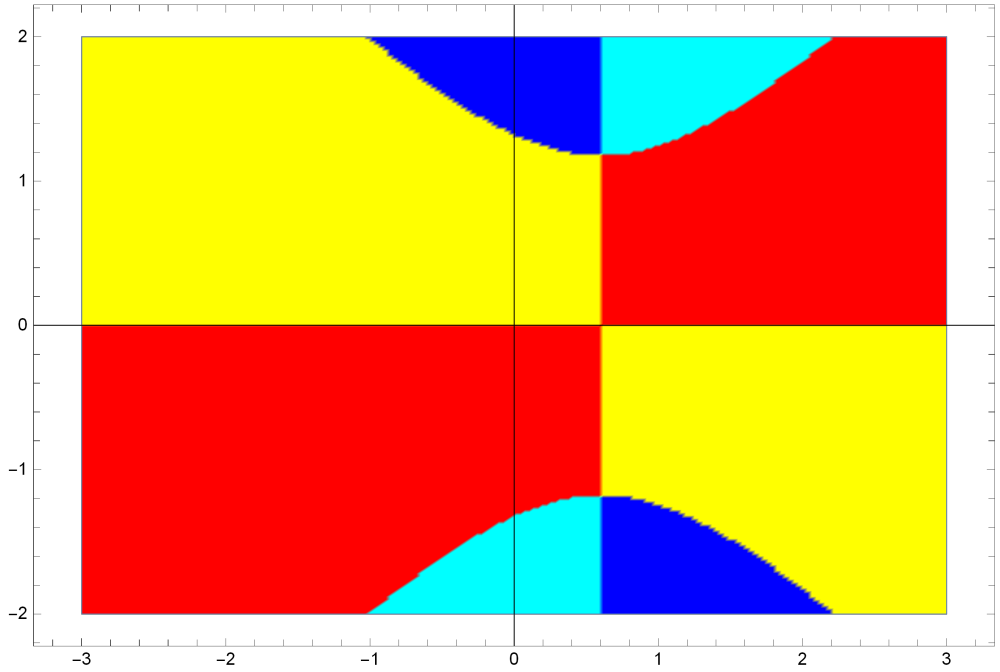
16.

$w(z) = z^2 - 0.6\,z + 0.47$



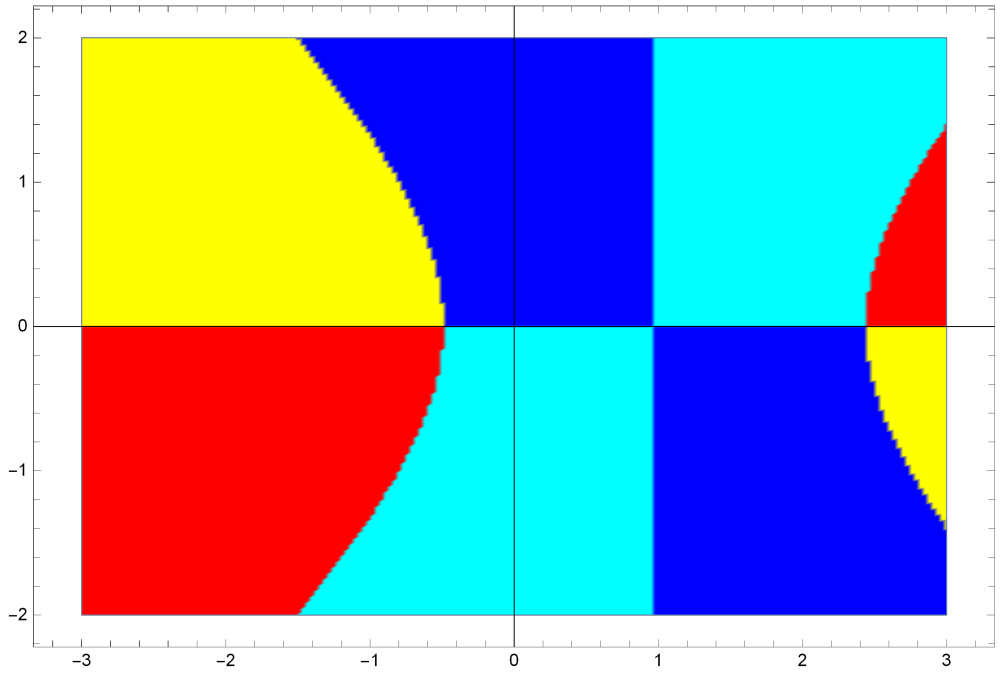
17.

$w(z) = z^2 - 1.2\,z + 1.75$



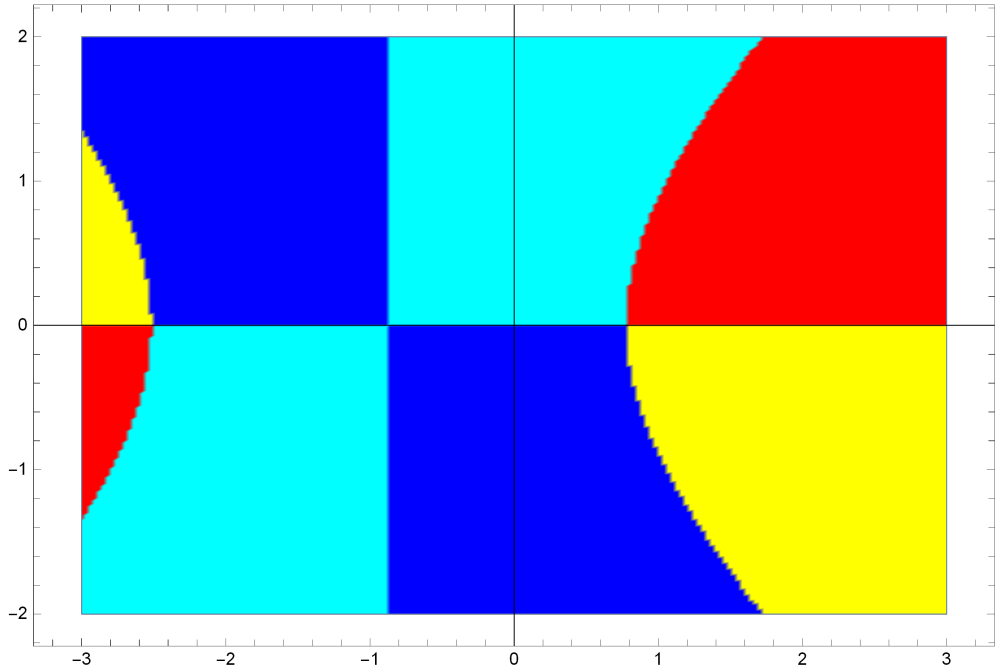
18.

$w(z) = z^2 - 1.95\,z - 1.19$



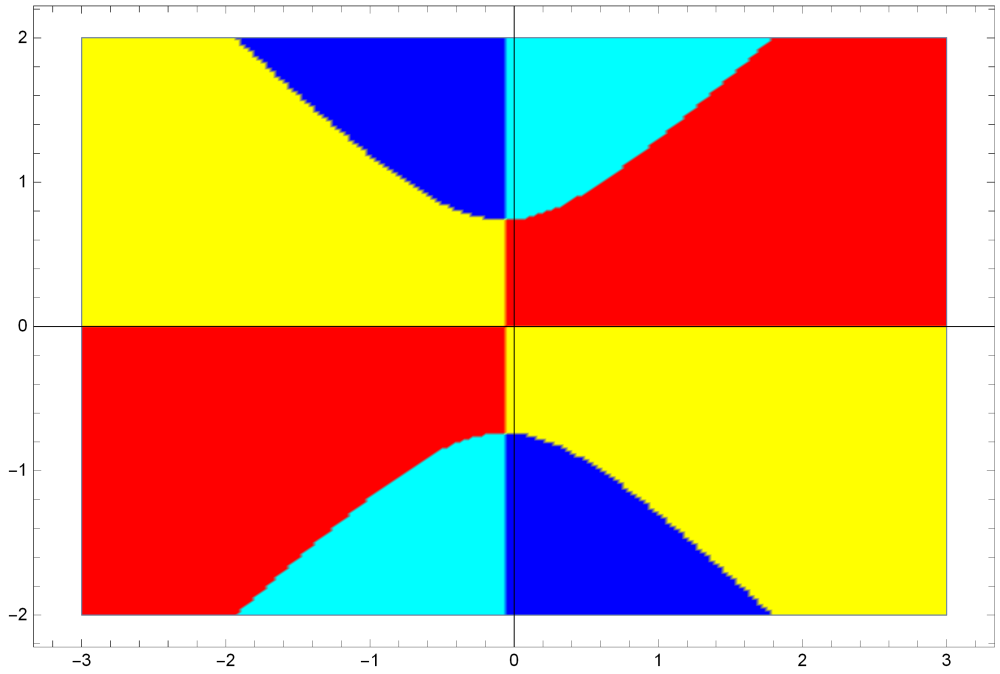
19.

$w(z) = z^2 + 1.74\,z - 1.95$



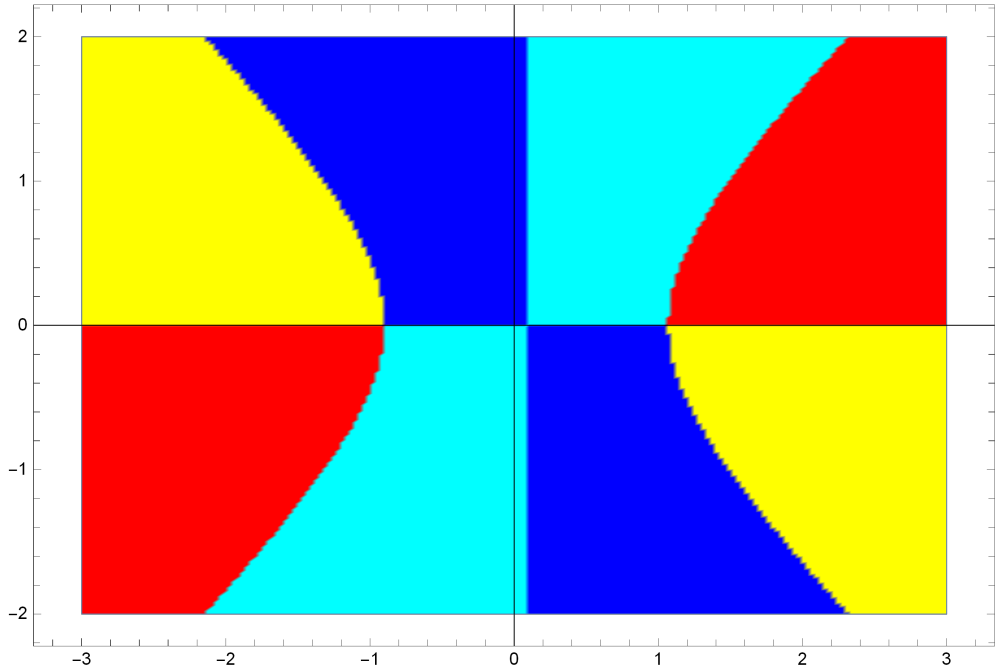
20.

$w(z) = z^2 + 0.14\,z + 0.55$



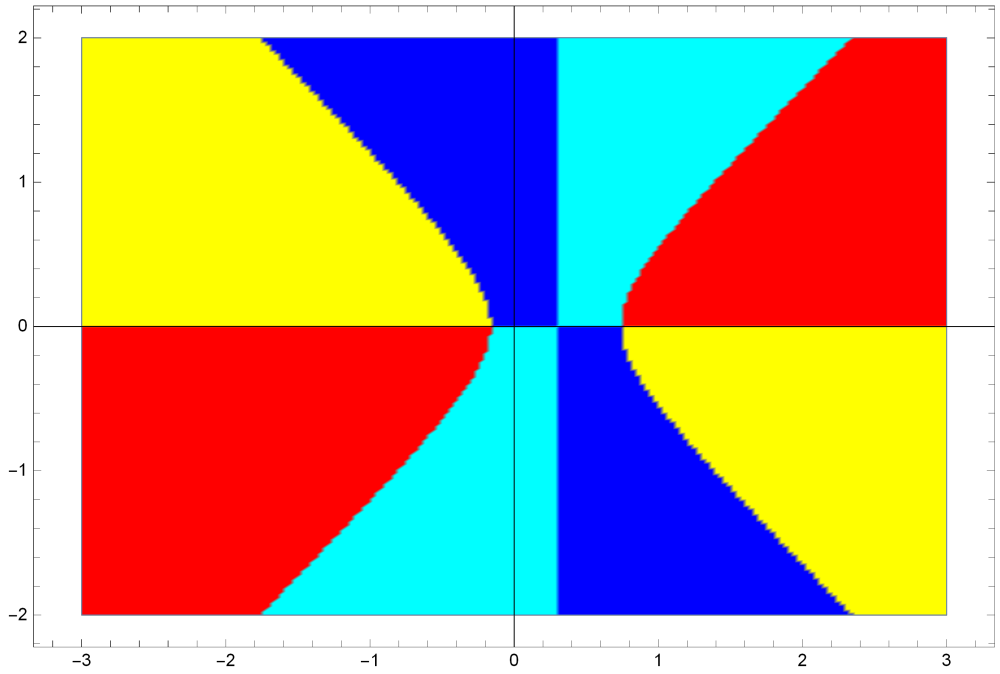
21.

$w(z) = z^2 - 0.17\,z - 0.96$



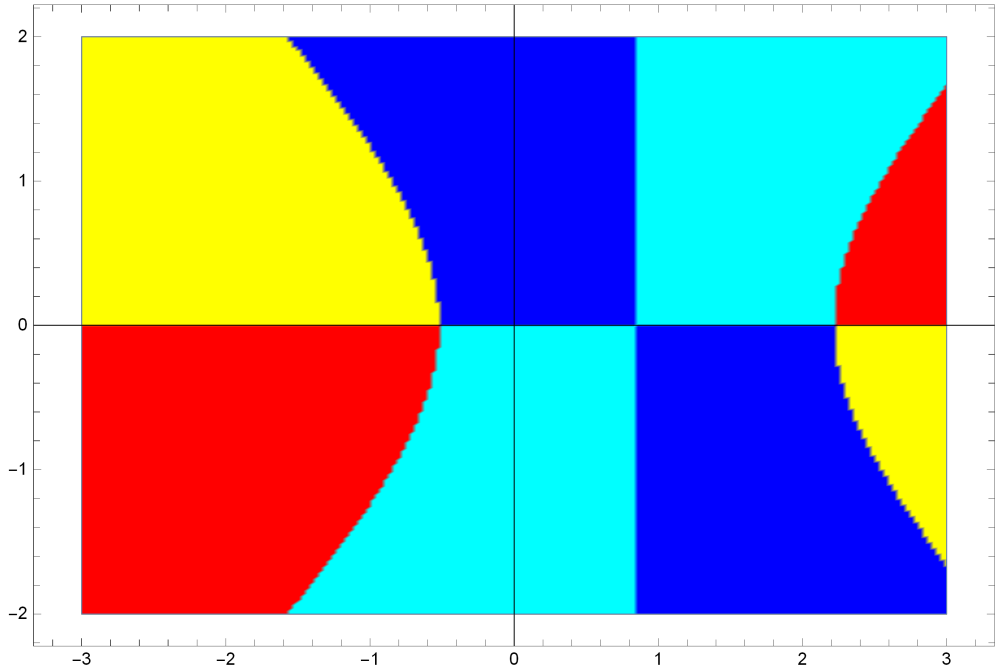
22.

$w(z) = z^2 - 0.58\,z - 0.12$



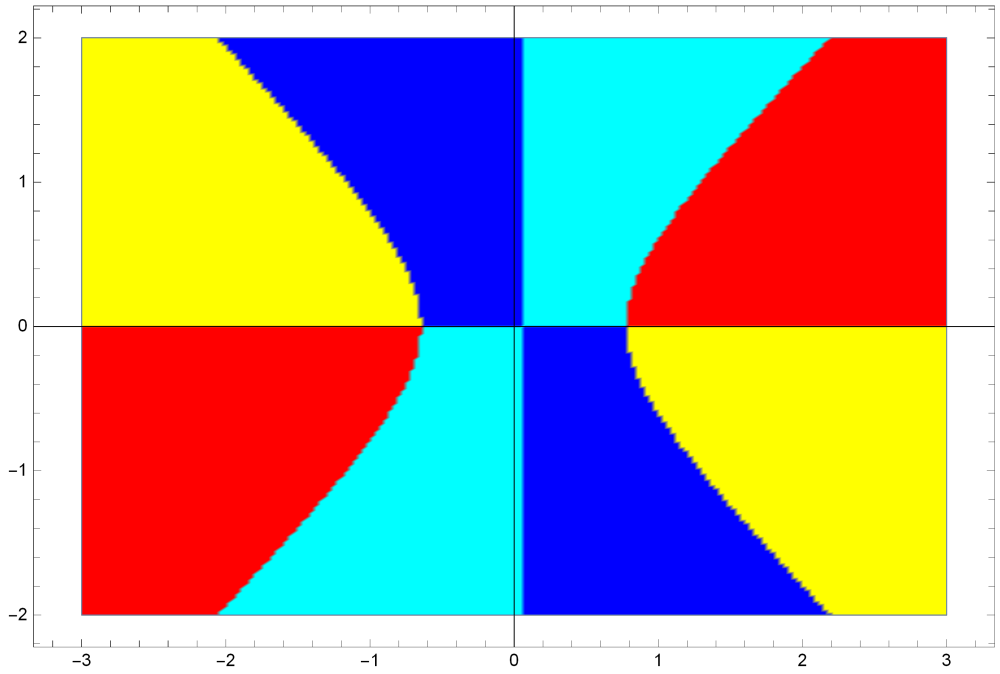
23.

$w(z) = z^2 - 1.7\,z - 1.15$



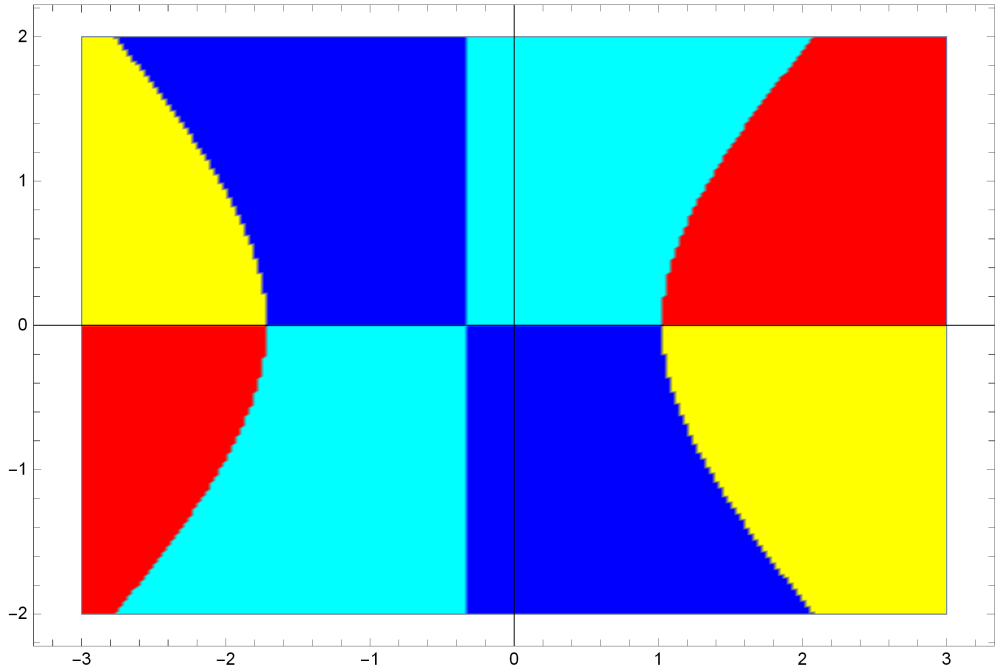
24.

$w(z) = z^2 - 0.13\,z - 0.5$



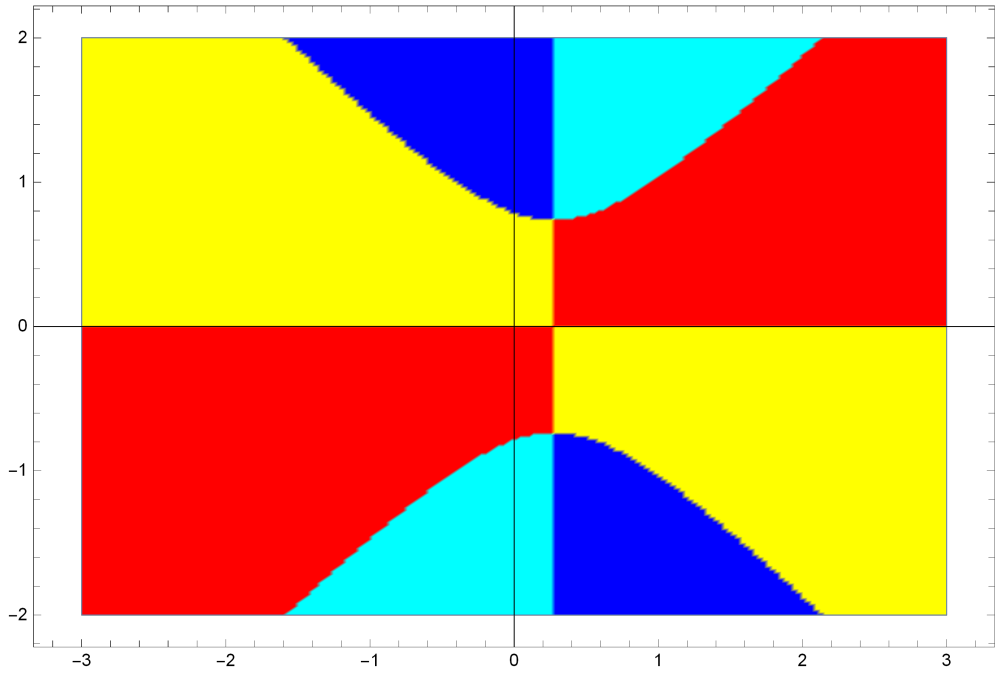
25.

$w(z) = z^2 + 0.69\,z - 1.76$



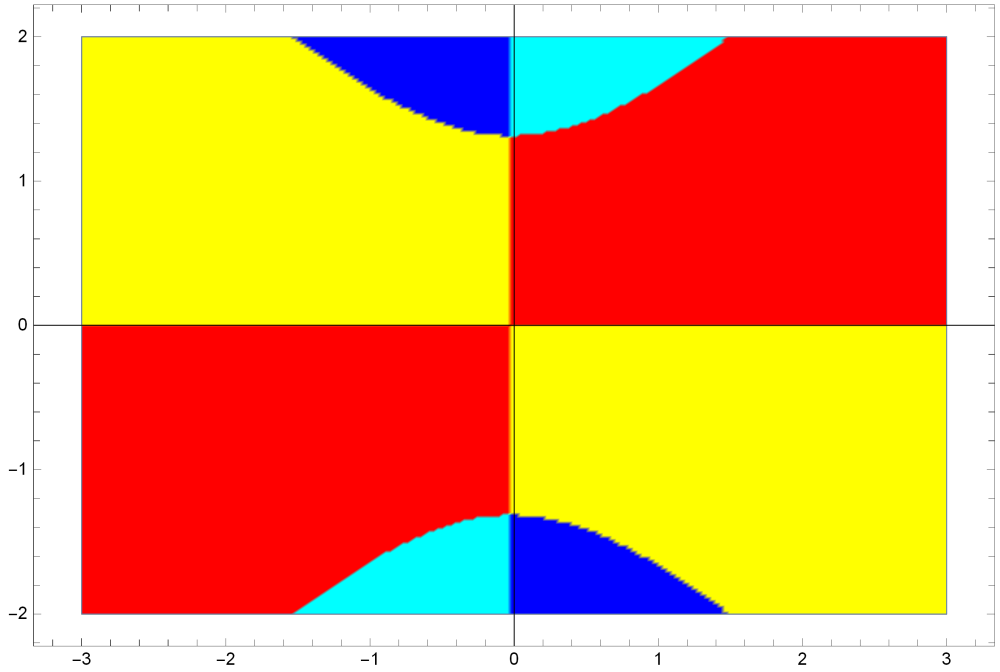
26.

$w(z) = z^2 - 0.55\,z + 0.62$



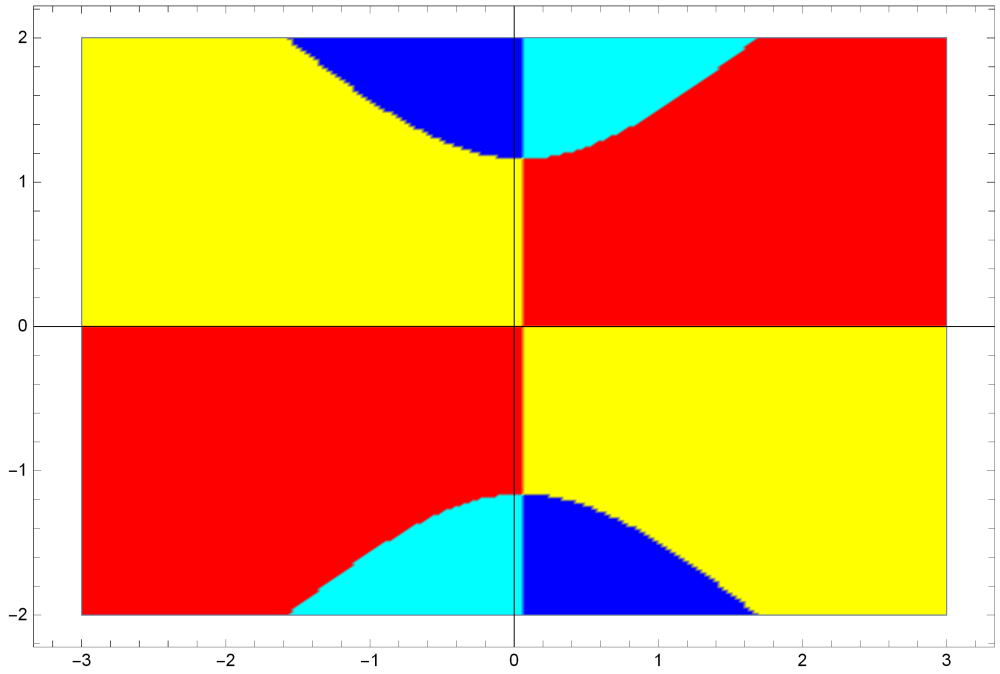
27.

$w(z) = z^2 + 0.04\, z + 1.73$



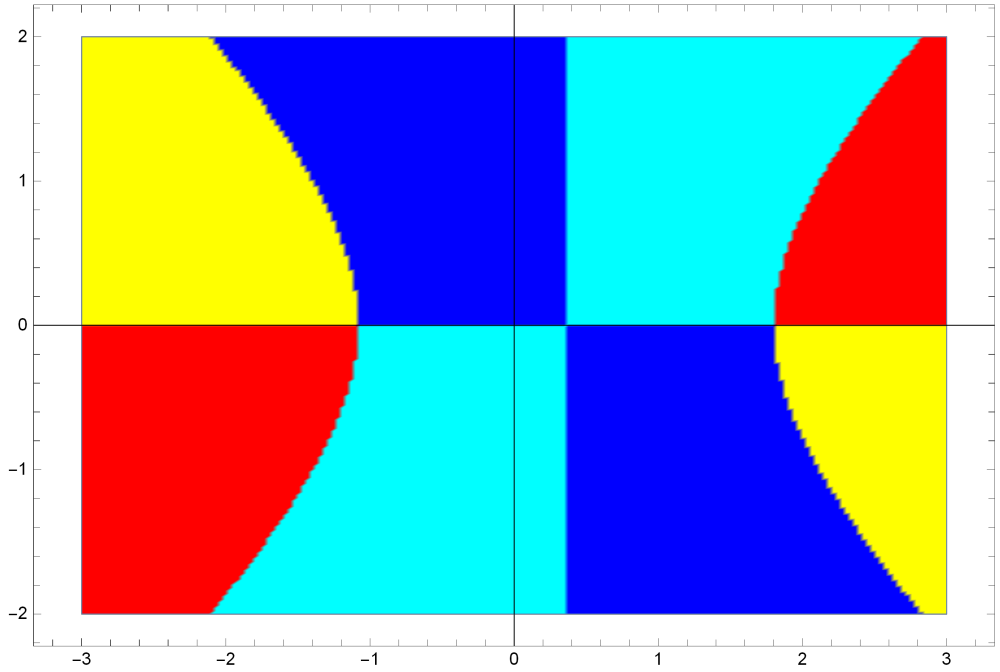
28.

$w(z) = z^2 - 0.11\, z + 1.35$



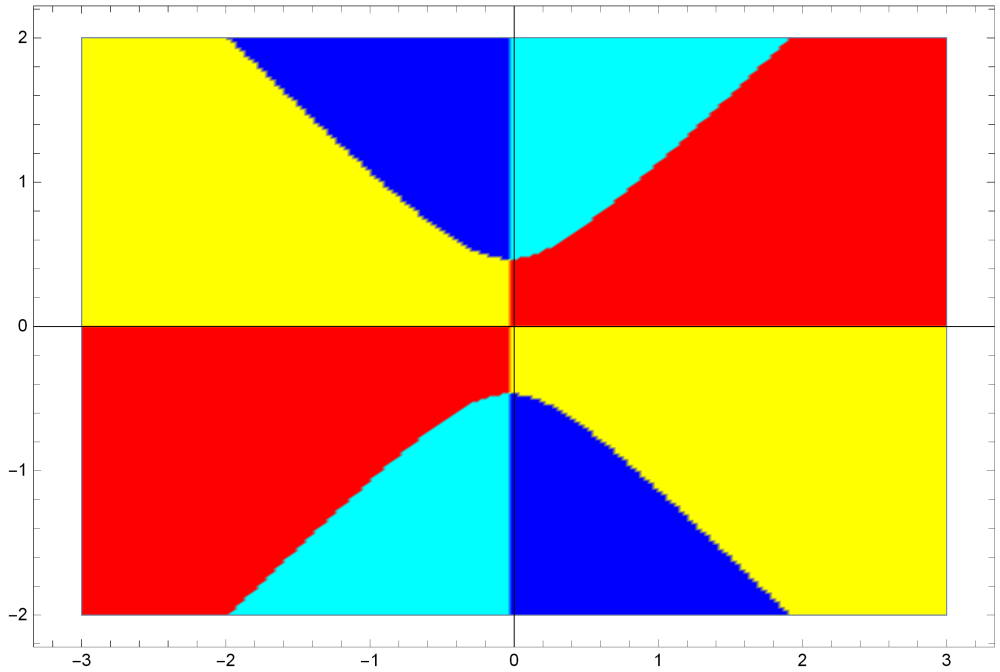
29.

$w(z) = z^2 - 0.72\,z - 1.95$



30.

$w(z) = z^2 + 0.07\,z + 0.22$



Rešitve:

1.

$w(z) = z^2 - 0.23\,z - 1.38$

$z_1 = -1.06535$
$z_2 = 1.29535$

2.

$w(z) = z^2 + 0.05\,z - 0.6$

$z_1 = -0.8$
$z_2 = 0.75$

3.

$w(z) = z^2 - 1.09\,z - 1.6$

$z_1 = -0.832325$
$z_2 = 1.92233$

4.

$w(z) = z^2 + 0.3\,z + 0.25$

$z_1 = -0.15 - 0.47697\,i$
$z_2 = -0.15 + 0.47697\,i$

5.

$w(z) = z^2 + 0.67\,z - 1.64$

$z_1 = -1.65872$
$z_2 = 0.988716$

6.

$w(z) = z^2 + 1.88\,z + 1.49$

$z_1 = -0.94 - 0.778717\,i$
$z_2 = -0.94 + 0.778717\,i$

7.

$w(z) = z^2 - 1.1\,z + 0.96$

$z_1 = 0.55 - 0.810864\,i$
$z_2 = 0.55 + 0.810864\,i$

8.

$w(z) = z^2 + 1.97\,z + 0.04$

$z_1 = -1.94948$
$z_2 = -0.0205183$

9.

$w(z) = z^2 + 0.9\,z - 0.49$

$z_1 = -1.28217$
$z_2 = 0.382166$

10.

$$w(z) = z^2 - 1.21\,z + 1.32$$

$z_1 = 0.605 - 0.976716\,i$
$z_2 = 0.605 + 0.976716\,i$

11.

$$w(z) = z^2 - 0.66\,z - 1.85$$

$z_1 = -1.06961$
$z_2 = 1.72961$

12.

$$w(z) = z^2 + 1.96\,z + 0.2$$

$z_1 = -1.85201$
$z_2 = -0.107991$

13.

$$w(z) = z^2 - 1.65\,z + 0.34$$

$z_1 = 0.241369$
$z_2 = 1.40863$

14.

$$w(z) = z^2 - 1.12\,z + 0.65$$

$z_1 = 0.56 - 0.58\,i$
$z_2 = 0.56 + 0.58\,i$

15.

$$w(z) = z^2 - 1.92\,z + 0.22$$

$z_1 = 0.122384$
$z_2 = 1.79762$

16.

$$w(z) = z^2 - 0.6\,z + 0.47$$

$z_1 = 0.3 - 0.616441\,i$
$z_2 = 0.3 + 0.616441\,i$

17.

$$w(z) = z^2 - 1.2\,z + 1.75$$

$z_1 = 0.6 - 1.17898\,i$
$z_2 = 0.6 + 1.17898\,i$

18.

$$w(z) = z^2 - 1.95\,z - 1.19$$

$z_1 = -0.488087$
$z_2 = 2.43809$

19.

$$w(z) = z^2 + 1.74\,z - 1.95$$

$z_1 = -2.51527$
$z_2 = 0.775266$

20.

$$w(z) = z^2 + 0.14\,z + 0.55$$

$z_1 = -0.07 - 0.738309\,i$
$z_2 = -0.07 + 0.738309\,i$

21.

$$w(z) = z^2 - 0.17\,z - 0.96$$

$z_1 = -0.898476$
$z_2 = 1.06848$

22.

$$w(z) = z^2 - 0.58\,z - 0.12$$

$z_1 = -0.161774$
$z_2 = 0.741774$

23.

$$w(z) = z^2 - 1.7\,z - 1.15$$

$z_1 = -0.518393$
$z_2 = 2.21839$

24.

$$w(z) = z^2 - 0.13\,z - 0.5$$

$z_1 = -0.645088$
$z_2 = 0.775088$

25.

$$w(z) = z^2 + 0.69\,z - 1.76$$

$z_1 = -1.71578$
$z_2 = 1.02578$

26.

$$w(z) = z^2 - 0.55\,z + 0.62$$

$z_1 = 0.275 - 0.737818\,i$
$z_2 = 0.275 + 0.737818\,i$

27.

$$w(z) = z^2 + 0.04\,z + 1.73$$

$z_1 = -0.02 - 1.31514\,i$
$z_2 = -0.02 + 1.31514\,i$

28.

$$w(z) = z^2 - 0.11\,z + 1.35$$

$z_1 = 0.055 - 1.16059\,i$
$z_2 = 0.055 + 1.16059\,i$

29.

$$w(z) = z^2 - 0.72\,z - 1.95$$

$z_1 = -1.08208$
$z_2 = 1.80208$

30.

$$w(z) = z^2 + 0.07\,z + 0.22$$

$z_1 = -0.035 - 0.467734\,i$
$z_2 = -0.035 + 0.467734\,i$

referenca : Izidor Hafner Plotting Rational Functions of a Complex Variable
http : //
demonstrations.wolfram.com / PlottingRationalFunctionsOfAComplexVariable / Wolfram Demonstrations Project
Published : March 30 × 2016