

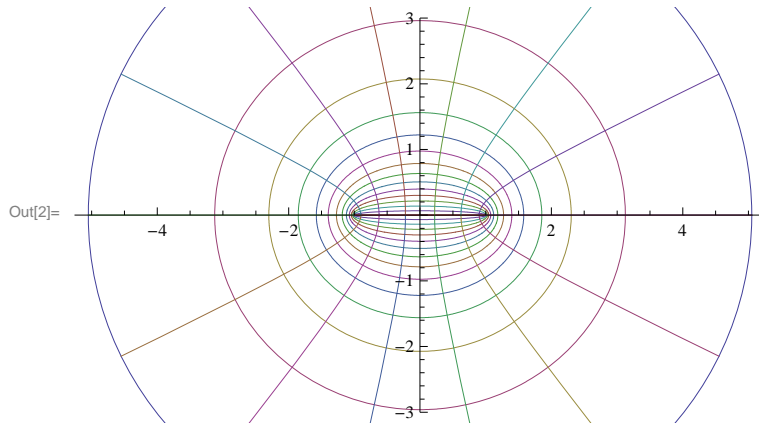
## ■ Analytische Funktionen als Orthogonaltrajektorien: Die Joukowski-Funktion

In[1]:= Needs["Graphics`ComplexMap`"]

General::obspkg :

Graphics`ComplexMap` is now obsolete. The legacy version being loaded may conflict with current Mathematica functionality. See the Compatibility Guide for updating information. >>

In[2]:= plot1 = PolarMap[ $\frac{1}{2} \left( \# + \frac{1}{\#} \right)$  &, {0.1, 1}, {0, 2  $\pi$ }, PlotRange -> {-3, 3}]



## ■ Das Joukowski-Profil

In[3]:= Clear[Realteil, Imaginärteil]

Realteil[f\_] := Simplify[ComplexExpand[Re[f /. z -> x + i y], TargetFunctions -> Conjugate]]

Imaginärteil[f\_] :=

Simplify[ComplexExpand[Im[f /. z -> x + i y], TargetFunctions -> Conjugate]]

In[6]:= u = Realteil[ $\frac{1}{2} \left( z + \frac{1}{z} \right)$ ]

Out[6]=  $\frac{1}{2} x \left( \frac{1}{x^2 + y^2} + 1 \right)$

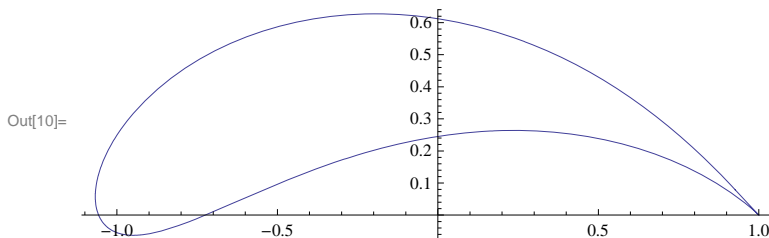
In[7]:= v = Imaginärteil[ $\frac{1}{2} \left( z + \frac{1}{z} \right)$ ]

Out[7]=  $\frac{1}{2} y \left( 1 - \frac{1}{x^2 + y^2} \right)$

In[8]:= x = -0.2 + 1.3 Cos[t];

y = 0.5 + 1.3 Sin[t];

In[10]:= plot2 = ParametricPlot[{u, v}, {t, 0, 2  $\pi$ }]



In[11]:= Clear[x, y]