

2D Contour Plots

⊞ FillContour

⊞ Contours

$pGrid(f(x, y), B, N)$

returns a grid $G = [X \ Y \ Z]$ with $N1 \times N2$ values of f in the box B

$pFillContour(G, g)$

plots the filled contour of with the data in G with colors in g

$$B = \begin{bmatrix} x1 & x2 \\ y1 & y2 \end{bmatrix} \quad N = \begin{bmatrix} nx \\ ny \end{bmatrix}$$

$pCmap(n, \alpha)$

creates a Jet colormap of n colors with a transparency

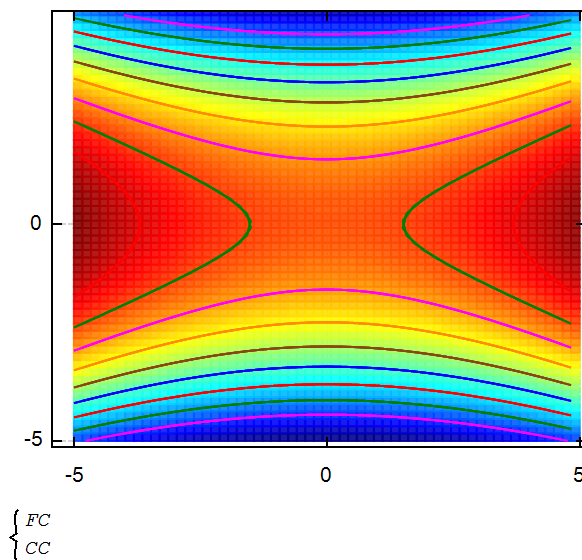
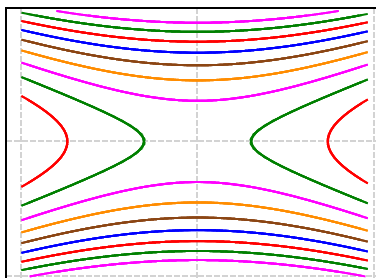
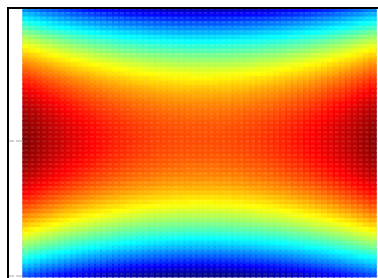
$g := pCmapJet(200, 0.9)$

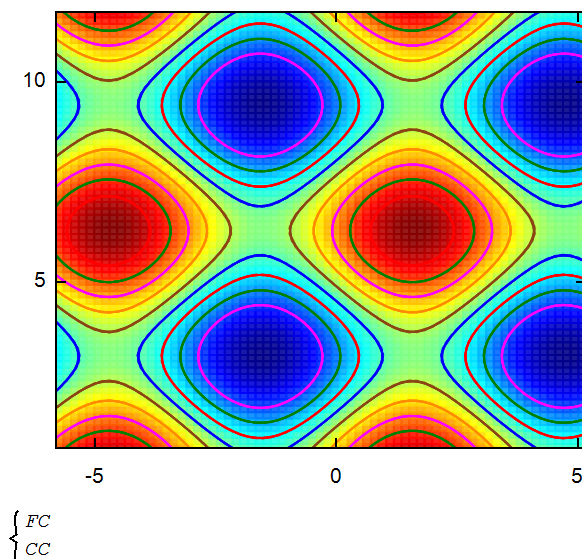
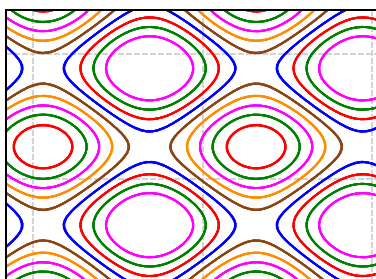
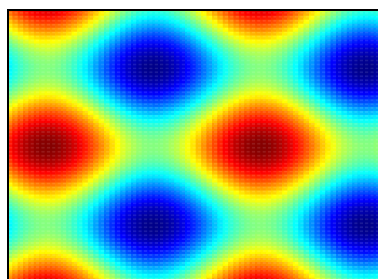
$pContour(G, v)$

plots v conotur levels with the data in G .

Examples

Select the number of contours: $v := 9$

$$\begin{aligned} f(x, y) &:= x^2 - 4 \cdot y^2 \\ B &:= \begin{bmatrix} -5 & 5 \\ -5 & 5 \end{bmatrix} \quad N := \begin{bmatrix} 60 \\ 60 \end{bmatrix} \\ G &:= pGrid(f(x, y), B, N) \\ FC &:= pFillContour(G, g) \\ CC &:= pContour(G, v) \end{aligned}$$


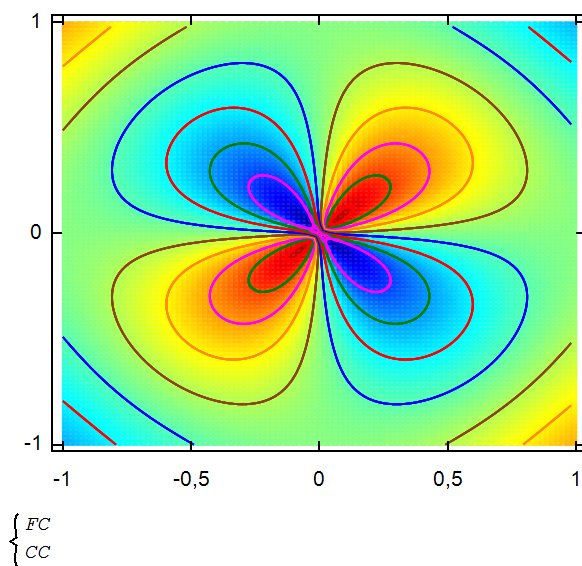
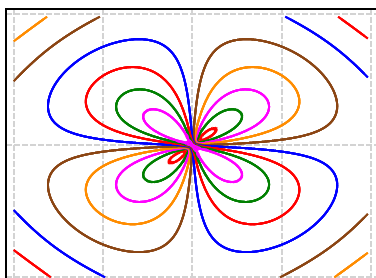
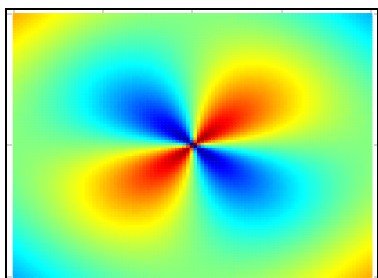
$$\begin{aligned} f(x, y) &:= \sin(x) + \cos(y) \\ B &:= \begin{bmatrix} -2 \cdot \pi & 2 \cdot \pi \\ 0 & 4 \cdot \pi \end{bmatrix} \quad N := \begin{bmatrix} 80 \\ 80 \end{bmatrix} \\ G &:= pGrid(f(x, y), B, N) \\ FC &:= pFillContour(G, g) \\ CC &:= pContour(G, v) \end{aligned}$$


Contour of a polar function $z(\rho, \varphi) = \sin(2\varphi)(1-\rho)$

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f(x, y) := [ ρ  φ ] := [ |x + i·y|  atan(y, x) ]
              sin(2·φ)·(1-ρ)
B := [ -1  1 ]  N := [ 100 ]
     [ -1  1 ]
G := pGrid(f(x, y), B, N)
FC := pFillContour(G, g)
CC := pContour(G, v)

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