# 2D Contour Plots

FillContour

Contours

| | |
|---|---|
| $pGrid(f(x, y), B, N)$ | returns a grid G = [X Y Z] with N1xN2 values of f in the box B |
| $pFillContour(G, g)$ | plots the filled contour of with the data in G with colors in g |
| $pCmap(n, \alpha)$ | creates a Jet colormap of n colors with α transparency |
| $pContour(G, v)$ | plots v conotur levels with the data in G. |

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

Mandelbrot set

## Mandelbrot set

$n := 15$

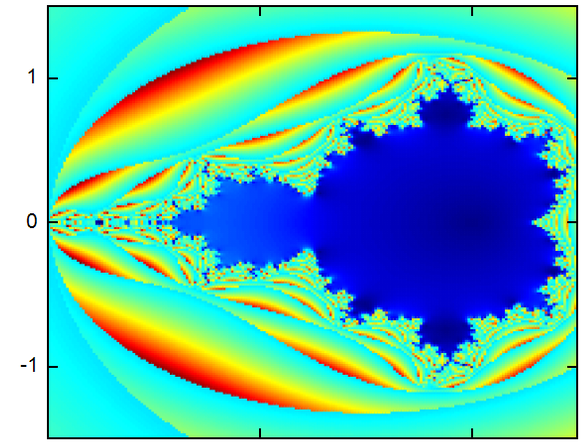
$Mandelbrot(x, y) :=$
- $[k := 0 \;\; z := 0]$
- while $(|z| < 2) \wedge (k < n)$
  - $[k := k + 1 \;\; z := z^2 + x + i \cdot y]$
- $|z|$

$B := \begin{bmatrix} -2 & 0.5 \\ -1.5 & 1.5 \end{bmatrix} \quad N := \begin{bmatrix} 200 \\ 200 \end{bmatrix}$

$G := eval(pGrid("Mandelbrot", B, N))$

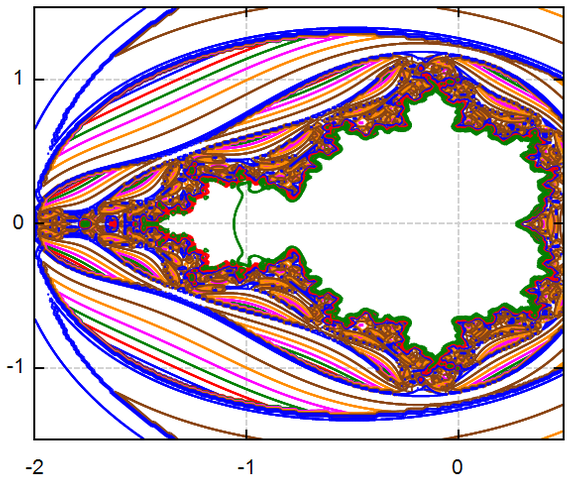
$g := pCmapJet(200, 0.9)$

$FC := pFillContour(G, g)$

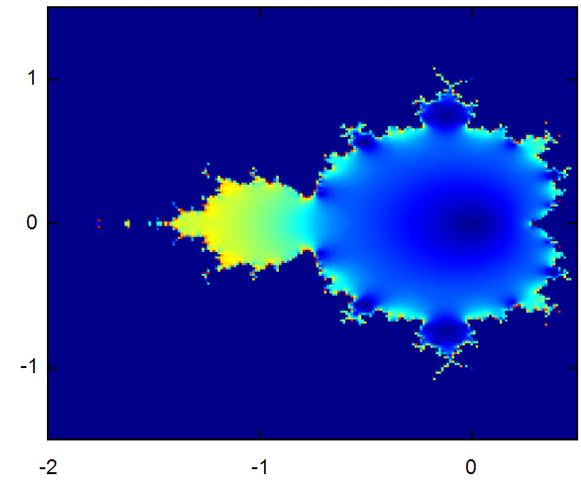



FC

Anothers views $[X \;\; Y \;\; Z] := G$




$pContour(G, 9)$




$pFillContour([[X \;\; Y \;\; \overrightarrow{|z| \cdot (|z| < 2)}], g)$

Alvaro