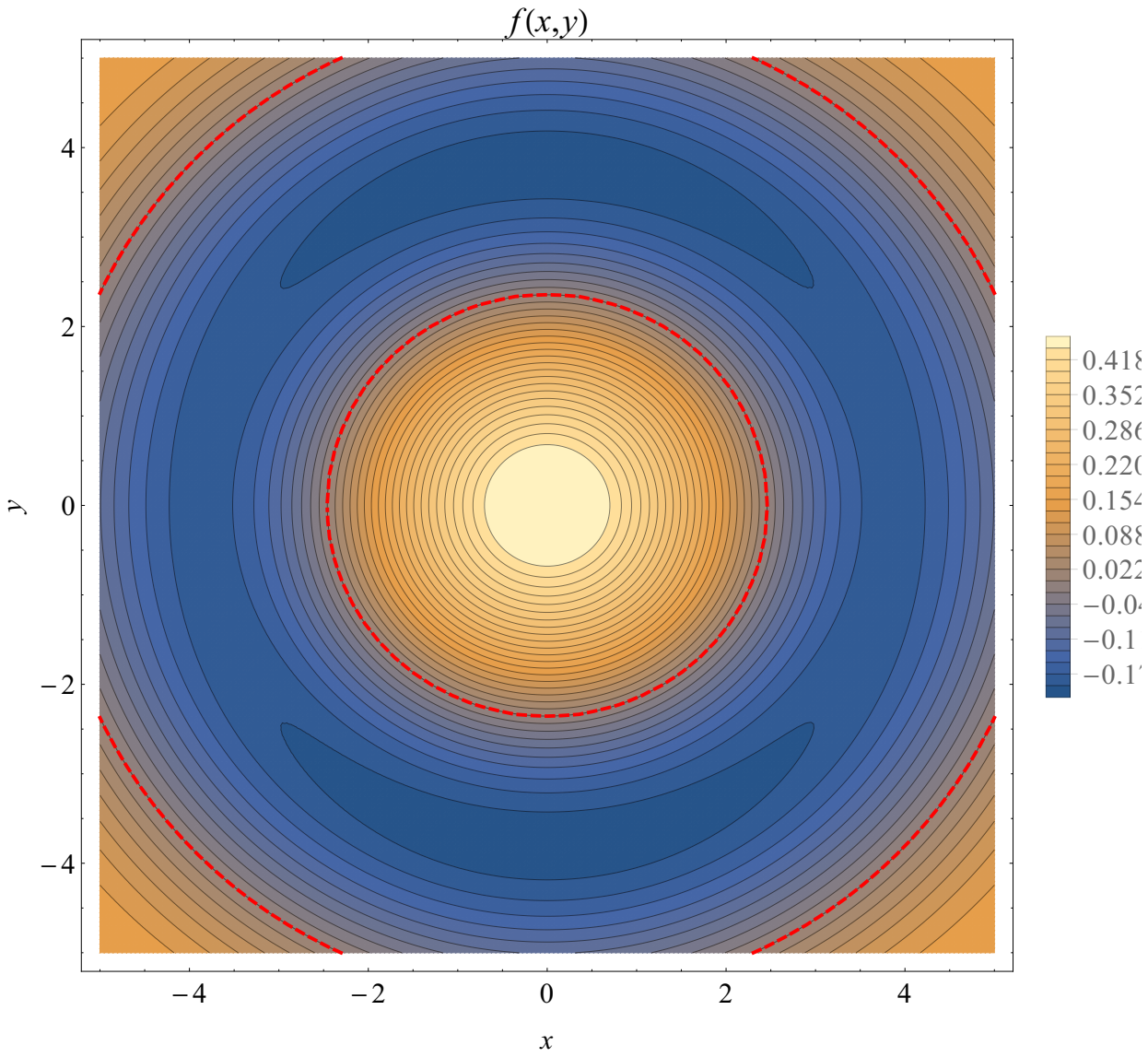
In[1]:=
```
(* define constant parameters *)
c = 1/Sqrt[2]; k = 1; r = 0;
(* define radial and angular Mathieu functions in elliptic coordinates *)
q = c^2 * k^2/4;
fμC[μC_] = MathieuC[MathieuCharacteristicA[r, q], q, μC];
fμν[μ_, ν_] = fμC[-i * μ] * fμC[ν];

(* define radial and angular Mathieu functions in Cartesian coordinates *)
fxy[x_, y_] =
  TransformedField["Elliptic" → "Cartesian", fμν[μ, ν], {μ, ν} → {x, y}] /. {å → c};
```

```
(* plot distribution fxy[x,y] *)

nPoints = 202; rPlot = 5; rPlotDif = 2 * rPlot / (nPoints - 1);
fontSize = 16; contours = 30;
Show[{
  ListContourPlot[
   Table[fxy[x, y], {y, -rPlot, rPlot, rPlotDif}, {x, -rPlot, rPlot, rPlotDif}]
   , DataRange → {{-rPlot, rPlot}, {-rPlot, rPlot}}
   , PlotRange → All
   , Contours → contours
   , PlotLegends → Placed[Automatic, Right]
   , FrameTicks → True
   , Frame → True
   , FrameTicksStyle → Directive[{FontFamily → "Times New Roman", FontSize → fontSize}]
   , FrameLabel → {"x", "y"}
   , FrameStyle → Directive[FontFamily → "Times New Roman", FontSize → fontSize]
   , PlotLabel → "f(x,y)"
   , LabelStyle → Directive[FontFamily → "Times New Roman", FontSize → fontSize]]
  , ContourPlot[{fxy[x, y] == 0}, {x, -rPlot, rPlot},
   {y, -rPlot, rPlot}, ContourStyle → {Red, Thick, Dashed}]
 }
 , ImageSize → Large]
```

Out[8]=


f(x,y)
4
2
0
−2
−4
y
−4
−2
0
2
4
x
0.418
0.352
0.286
0.220
0.154
0.088
0.022
−0.04
−0.1
−0.17