

7

ALDAGAI ANITZEKO FUNTZIOEN ADIERAZPEN GRAFIKOA

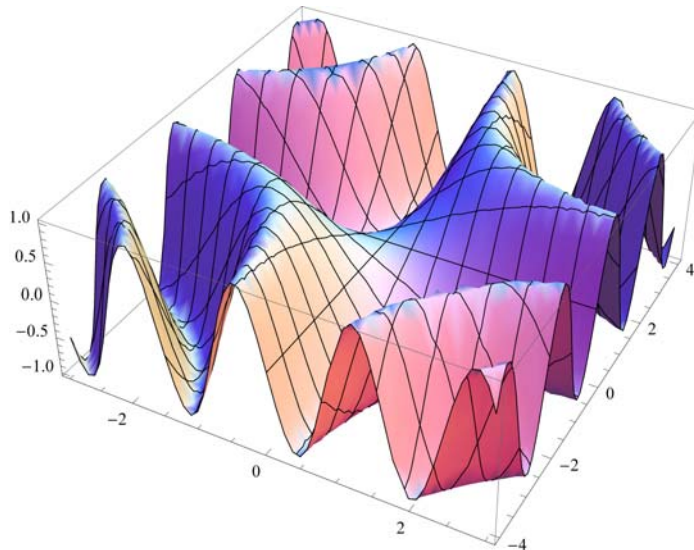
7.1. Bi aldagaitako funtzioen adierazpen grafikoa

▼ Plot3D[] funtzioa

★ Plot [funtzioa , {x, xmin, xmax},{y, ymin, ymax}]

Bi aldagaitako funtzio baten adierazpen grafikoa

```
Clear["Global`*"]  
Plot3D[Sin[x * y], {x, -3, 3}, {y, -4, 4}]
```



Bi aldagaitako bi funtzioen adierazpen grafikoa

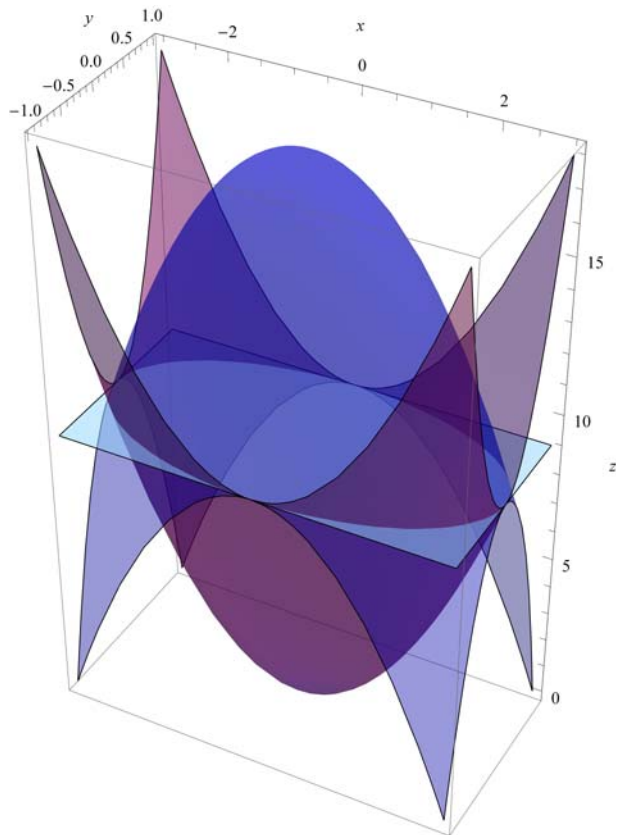
$$z1[x_, y_] = 18 - x^2 - 9 y^2$$

$$18 - x^2 - 9 y^2$$

$$z2[x_, y_] = x^2 + 9 y^2$$

$$x^2 + 9 y^2$$

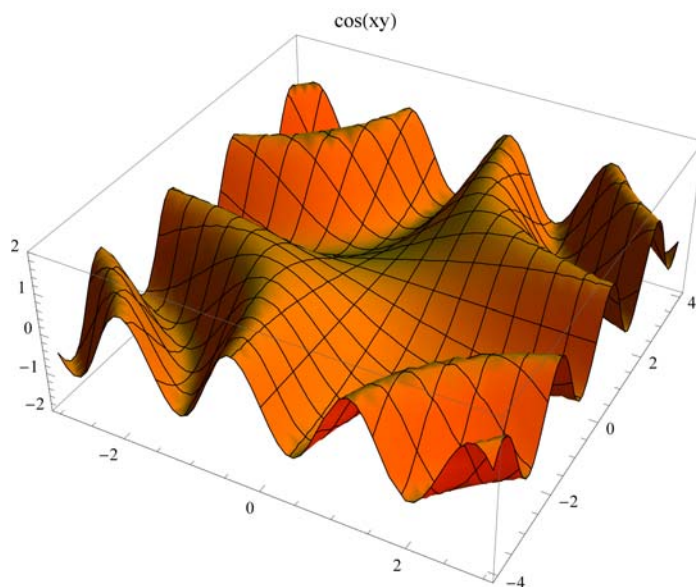
```
Plot3D[{z1[x, y], z2[x, y], 9}, {x, -3, 3}, {y, -1, 1}, BoxRatios -> {2, 1, 3},
  Mesh -> False, AxesLabel -> {x, y, z}, PlotStyle -> {Directive[Blue, Opacity[0.4]],
  Directive[Purple, Opacity[0.5]], Directive[LightGreen, Opacity[0.5]]}]
```



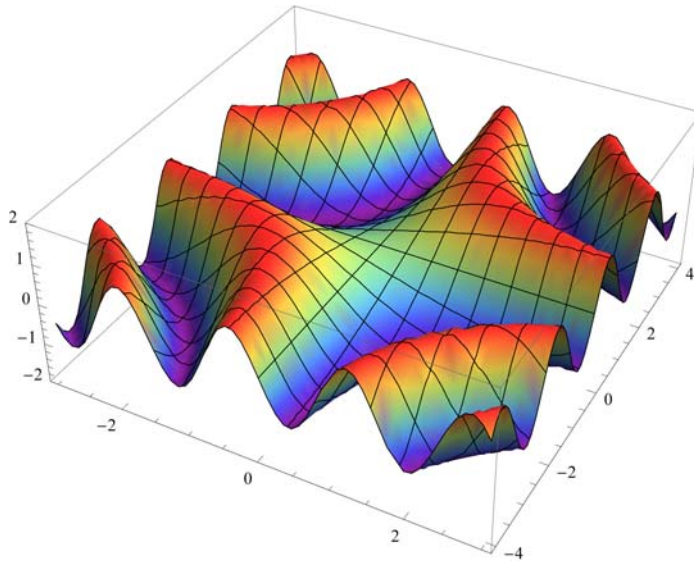
▼ Plot3D[] funtzioaren aukerak

★ Kolorea, etiketak, e.a.

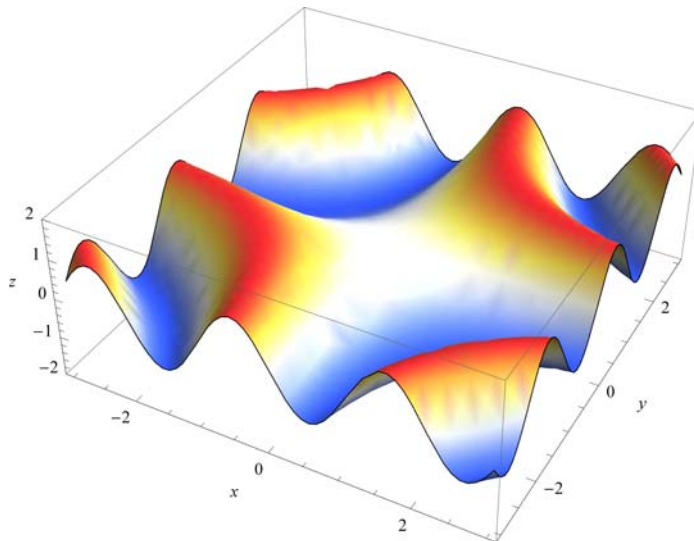
```
Plot3D[Sin[x * y], {x, -3, 3}, {y, -4, 4},
  PlotRange -> {-2, 2}, PlotLabel -> "cos(xy)", PlotStyle -> Orange]
```



```
Plot3D[Sin[x * y], {x, -3, 3}, {y, -4, 4}, PlotRange -> {-2, 2}, ColorFunction -> "Rainbow"]
```



```
Plot3D[Sin[x * y], {x, -3, 3}, {y, -3, 3}, PlotRange -> {-2, 2},  
ColorFunction -> "TemperatureMap", Mesh -> False, AxesLabel -> {x, y, z}]
```

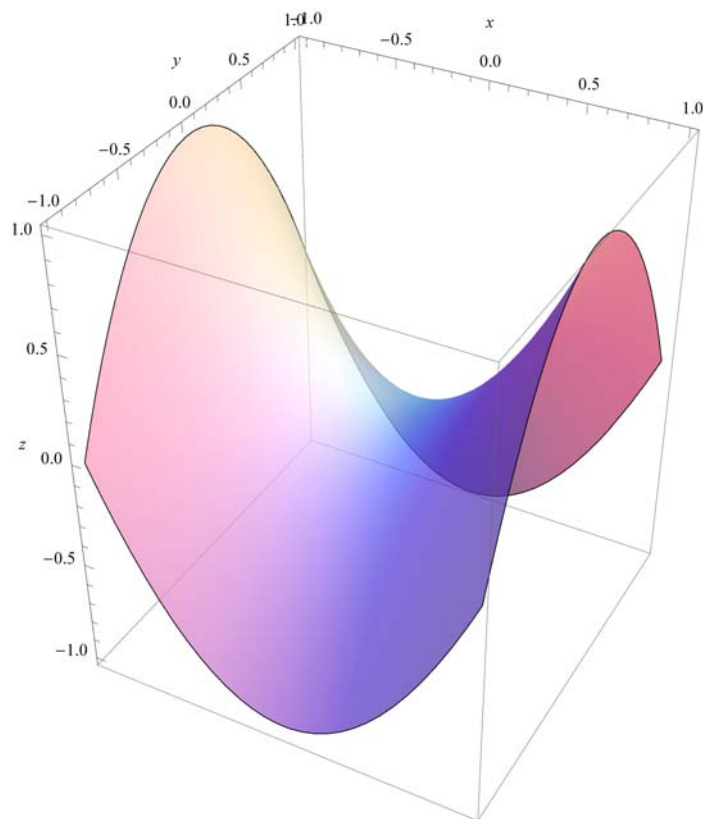


★ Ardatzen proportzionaltasuna eta gardentasuna (Opacity)

```
h[x_, y_] = x^2 - y^2
```

$$x^2 - y^2$$

```
Plot3D[h[x, y], {x, -1, 1}, {y, -1, 1}, PlotStyle -> Directive[Opacity[0.7]],
  PlotPoints -> 30, Mesh -> False, BoxRatios -> {1, 1, 1.2}, AxesLabel -> {x, y, z}]
```

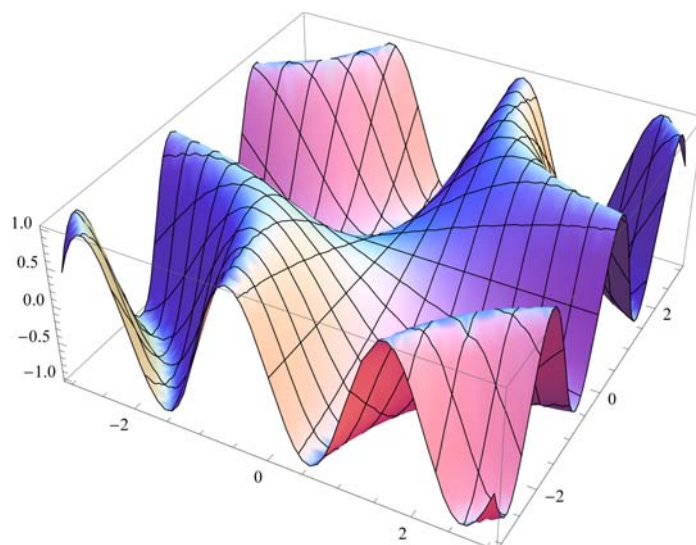


7.2 Maila kurbak

▼ ContourPlot[]

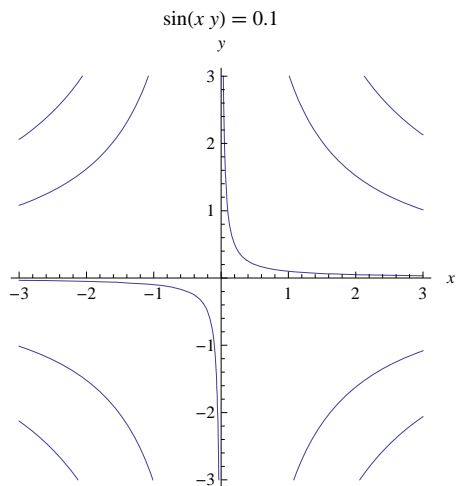
★ ContourPlot [funtzioa, {x, xmin, xmax}, {y, ymin, ymax}]

```
Plot3D[Sin[x * y], {x, -3, 3}, {y, -3, 3}]
```



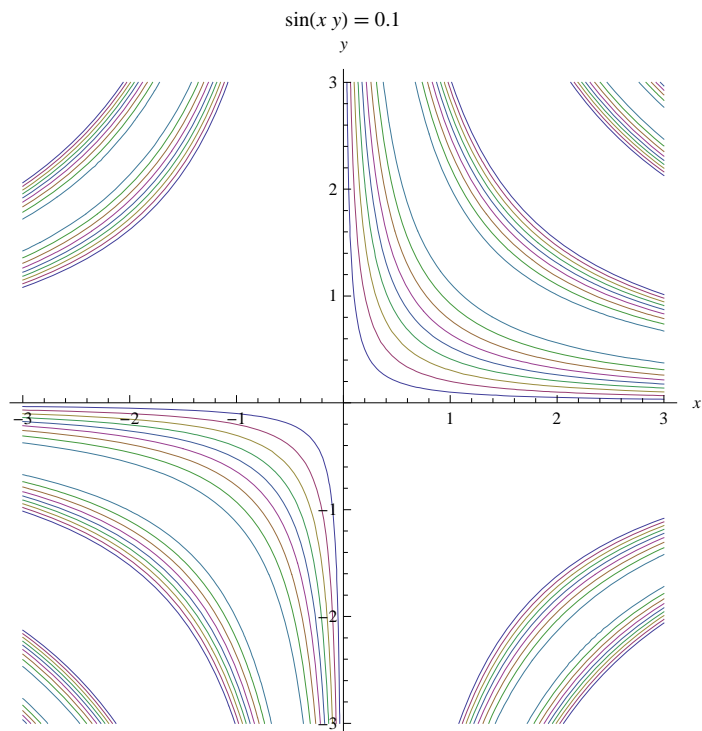
★ ContourPlot [ekuazioa , {x, xmin, xmax},{y, ymin, ymax}]

```
ContourPlot[Sin[x * y] == 0.1, {x, -3, 3}, {y, -3, 3}, Frame -> False,
  Axes -> True, AxesLabel -> {x, y}, PlotLabel -> Sin[x y] == 0.1]
```



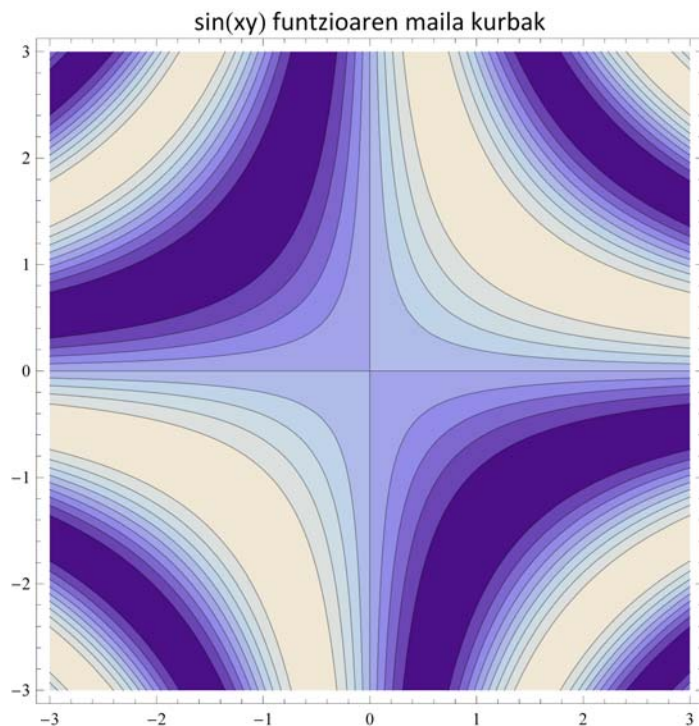
★ ContourPlot [{ekuazioa 1, ekuazioa 2}, {x, xmin, xmax},{y, ymin, ymax}]

```
ContourPlot[Evaluate[Table[Sin[x * y] == 0.1 * k, {k, 1, 10}], {x, -3, 3}, {y, -3, 3},
  Frame -> False, Axes -> True, AxesLabel -> {x, y}, PlotLabel -> Sin[x y] == 0.1]
```

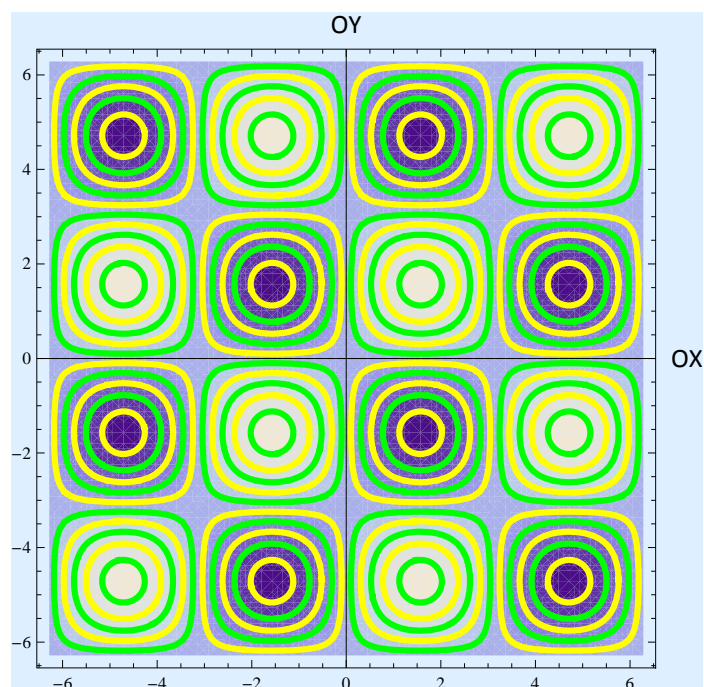


▼ ContourPlot[] funtzioaren aukerak

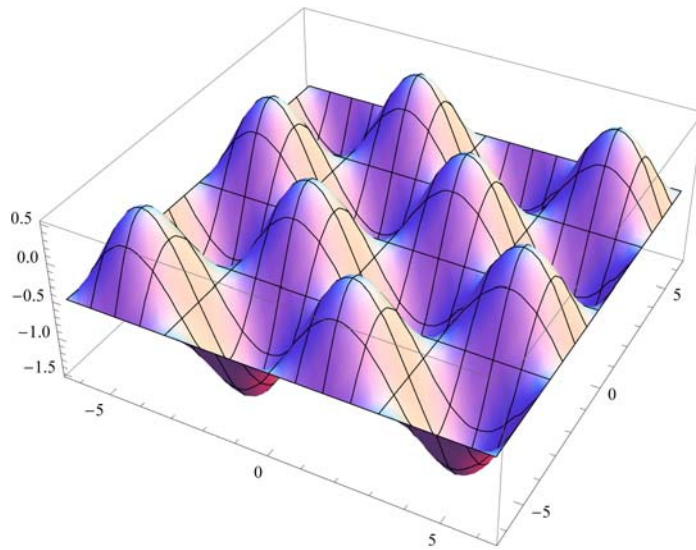
```
ContourPlot[Sin[x * y], {x, -3, 3}, {y, -3, 3}, PlotLabel -> "sin(xy) funtzioaren maila kurbak"]
```



```
ContourPlot[{Sin[x] * Sin[y] - 0.5}, {x, -2 π, 2 π}, {y, -2 π, 2 π},
  ContourStyle -> {{Thickness[0.01], Yellow}, {Thickness[0.01], Green}},
  Axes -> True, AxesLabel -> {"OX", "OY"}, Background -> LightBlue]
```

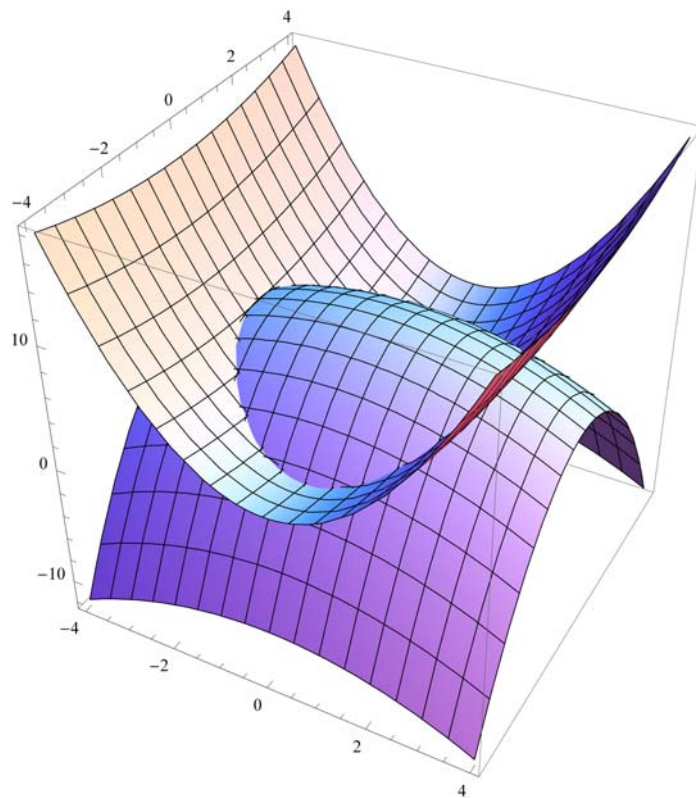


```
Plot3D[{Sin[x] * Sin[y] - 0.5}, {x, -2 π, 2 π}, {y, -2 π, 2 π}]
```

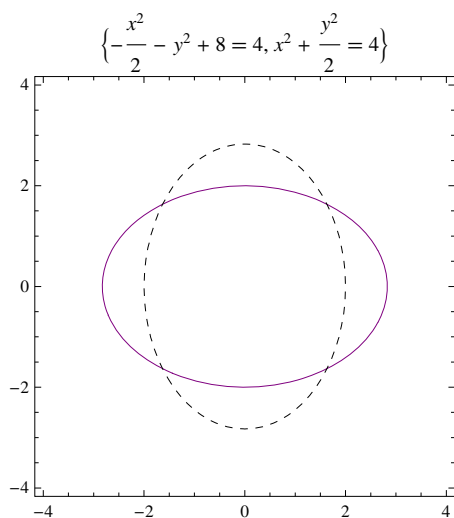


7.3 Bi gainazalek mugatutako eremua

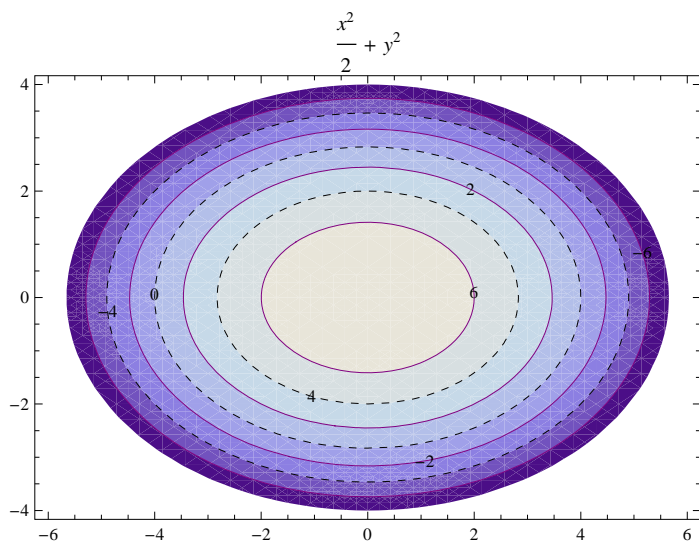
```
Plot3D[{8 - (x^2 / 4 + y^2), (x^2 + y^2 / 8)}, {x, -4, 4}, {y, -4, 4}, BoxRatios -> {1, 1, 1}]
```



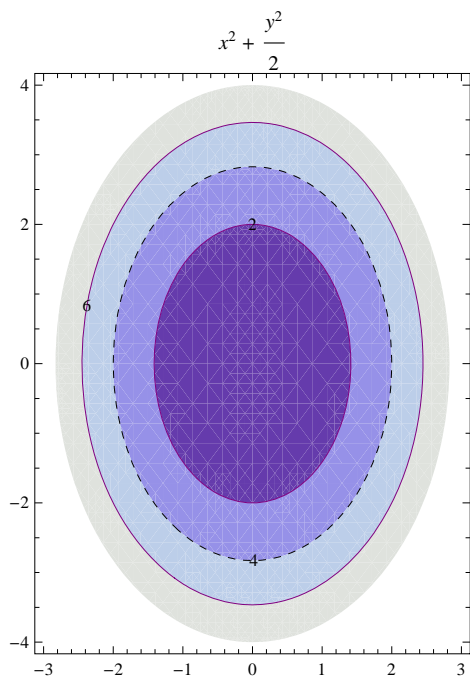
```
ContourPlot[{8 - (x^2 / 2 + y^2) == 4, (x^2 + y^2 / 2) == 4},
  {x, -4, 4}, {y, -4, 4}, ContourStyle -> {Purple, Dashed},
  PlotLabel -> {8 - (x^2 / 2 + y^2) == 4 , (x^2 + y^2 / 2) == 4},
  AspectRatio -> Automatic, ContourLabels -> True]
```



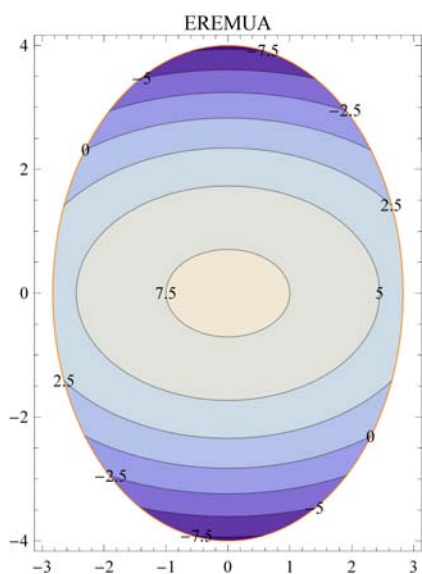
```
ContourPlot[8 - (x^2 / 2 + y^2), {x, -6, 6}, {y, -4, 4},
  ContourStyle -> {Purple, Dashed}, PlotLabel -> x^2 / 2 + y^2,
  AspectRatio -> Automatic, ContourLabels -> True, PlotRange -> {-8, 8}]
```




```
ContourPlot[x^2 + y^2 / 2, {x, -3, 3}, {y, -4, 4},
  ContourStyle -> {Purple, Dashed}, PlotLabel -> x^2 + y^2 / 2,
  AspectRatio -> Automatic, ContourLabels -> True, PlotRange -> {-8, 8}]
```



```
ContourPlot[8 - (x^2 / 2 + y^2), {x, -3, 3}, {y, -4, 4}, PlotLabel -> "EREMUA",
  ContourLabels -> True, RegionFunction -> Function[{x, y, z}, 0 < x^2 + y^2 / 2 < 8],
  BoundaryStyle -> Orange, AspectRatio -> Automatic]
```



```
Plot3D[8 - (x^2 / 2 + y^2), {x, -3, 3}, {y, -4, 4}, PlotLabel -> "EREMUA",  
RegionFunction -> Function[{x, y, z}, 0 < x^2 + y^2 / 2 < 8],  
BoundaryStyle -> Orange, AspectRatio -> Automatic]
```

