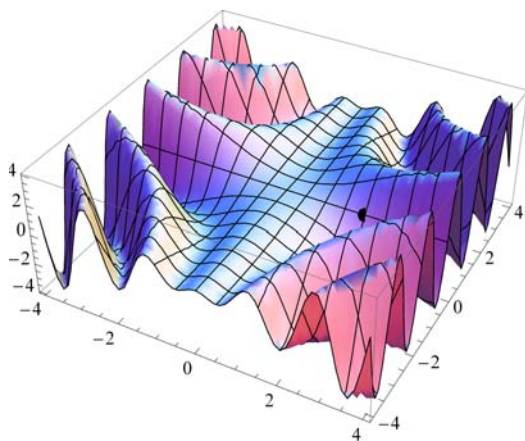


Capítol 13. El concepte de límit

Apartat 13.2.3.3. Exemples

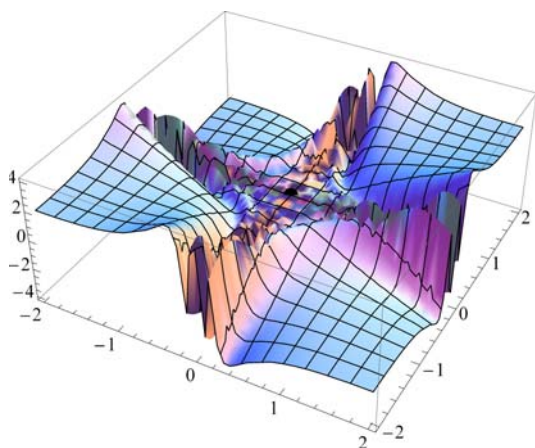
```
exemple132331[x_, y_] := x Sin[xy]
```

```
Show[{  
  Plot3D[exemple132331[x, y], {x, -4, 4}, {y, -4, 4},  
  Graphics3D[{PointSize[0.03], Point[{2, 0, exemple132331[2, 0]}]}]}  
}]
```



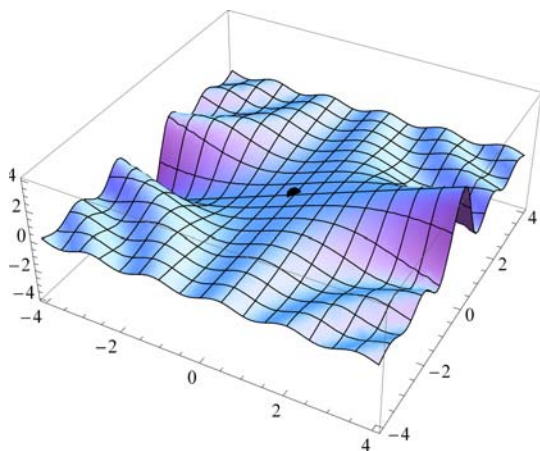
```
exemple132332[x_, y_] := (x^2 + y^2) Sin[1/(xy)]
```

```
Show[{  
  Plot3D[exemple132332[x, y], {x, -2, 2}, {y, -2, 2},  
  Graphics3D[{PointSize[0.03], Point[{0, 0, 0}]}]}  
}]
```

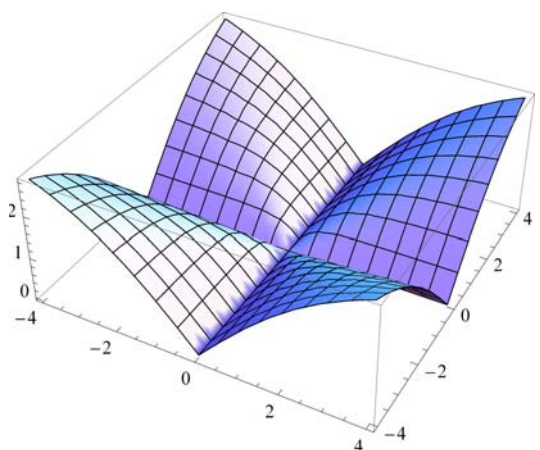


```
exemple132333[x_, y_] := Sin[xy] / y
```

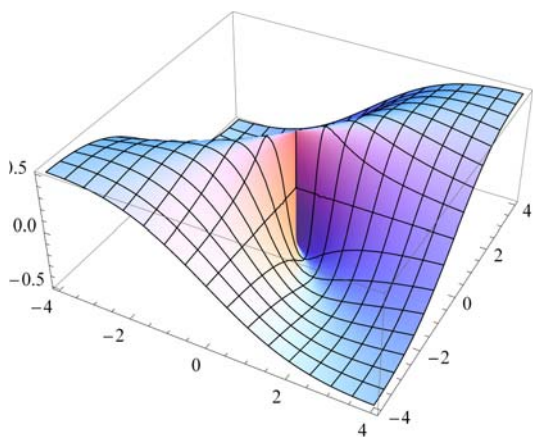
```
Show[{
  Plot3D[exemple132333[x, y], {x, -4, 4}, {y, -4, 4}, PlotRange -> All],
  Graphics3D[{PointSize[0.03], Point[{0, 0, 0}]}]
}]
```



```
exemple132334[x_, y_] := Abs[x y] / Sqrt[x^2 + y^2]
Plot3D[exemple132334[x, y], {x, -4, 4}, {y, -4, 4}]
```

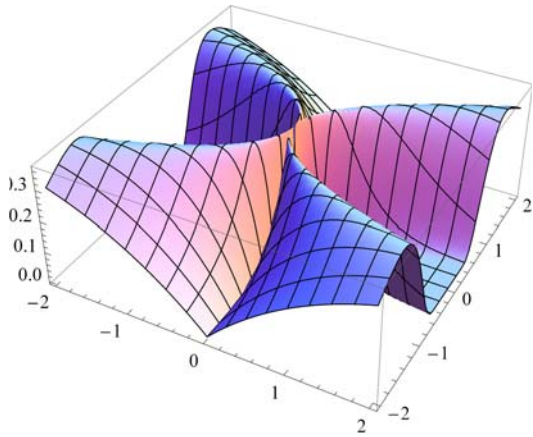


```
exemple132335[x_, y_] := x y / (x^2 + y^2)
Plot3D[exemple132335[x, y], {x, -4, 4}, {y, -4, 4}, PlotPoints -> 50, MaxRecursion -> 10]
```

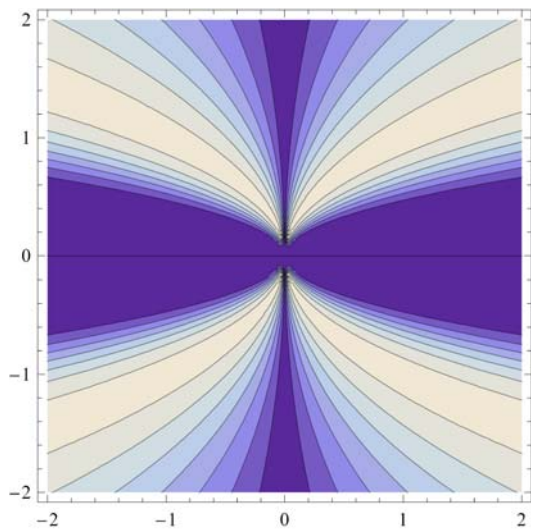


```
exemple132336[x_, y_] := Abs[x] / y^2 E^(-Abs[x] / y^2)
```

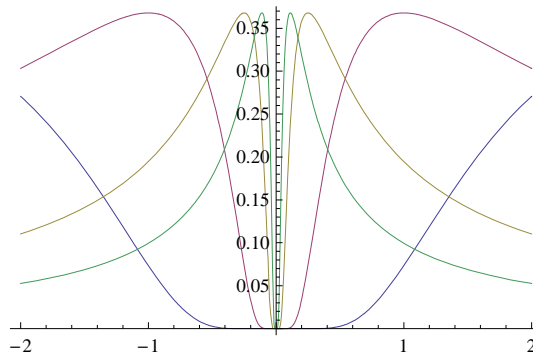
```
Plot3D[exemple132336[x, y], {x, -2, 2}, {y, -2, 2}, PlotPoints -> 50, MaxRecursion -> 10]
```



```
ContourPlot[exemple132336[x, y], {x, -2, 2}, {y, -2, 2}]
```



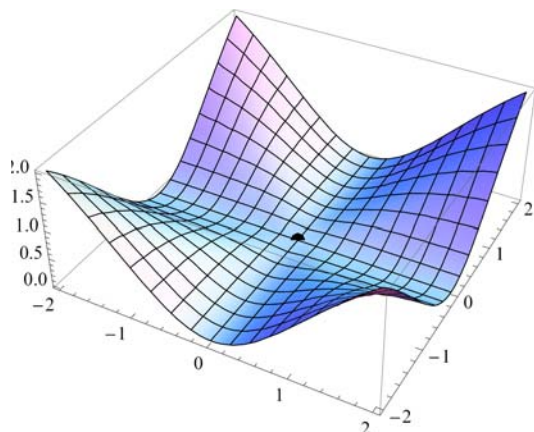
```
Plot[{exemple132336[x, x/2], exemple132336[x, x],
      exemple132336[x, 2 x], exemple132336[x, 3 x]}, {x, -2, 2}]
```



Exercici 13.21

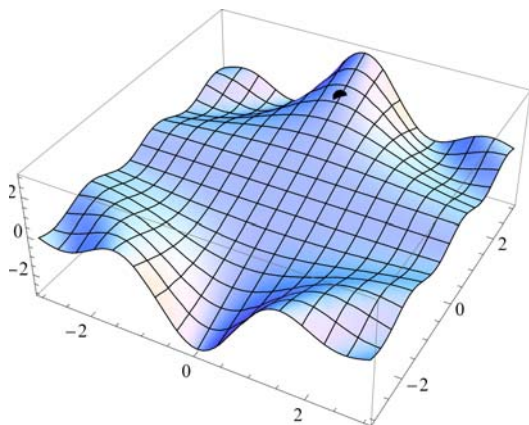
```
funcio1321A[x_, y_] := x^2 y^2 / (x^2 + y^2)
```

```
Show[{Plot3D[funcio1321A[x, y], {x, -2, 2}, {y, -2, 2}],
Graphics3D[{PointSize[0.03], Point[{0, 0, 0}]}]}]
```



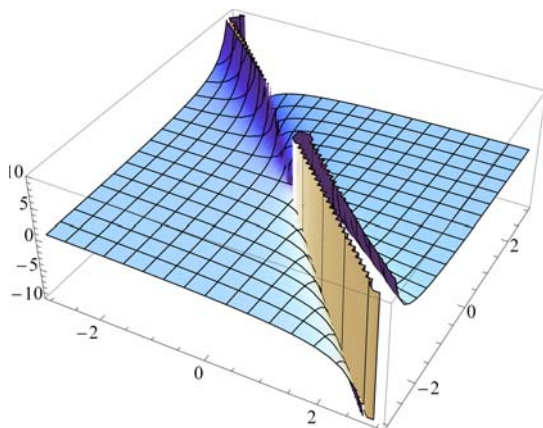
```
funcio1321B[x_, y_] := Sin[x y] / x
```

```
Show[{
Plot3D[funcio1321B[x, y], {x, -3, 3}, {y, -3, 3}],
Graphics3D[{PointSize[0.03], Point[{0, 2, 2}]}]}
}]
```

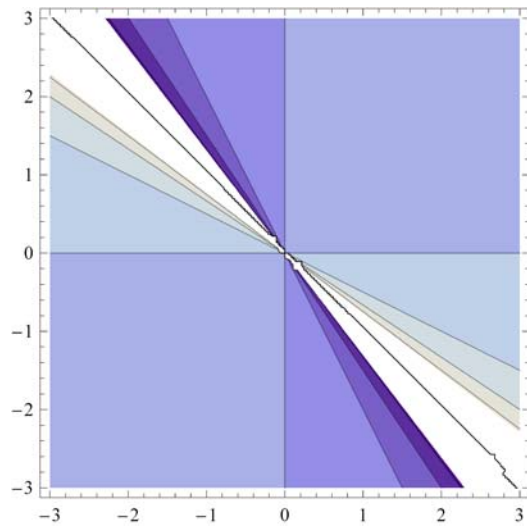


```
funcio1321C[x_, y_] := x / (x + y)
```

```
Plot3D[funcio1321C[x, y], {x, -3, 3}, {y, -3, 3}, ClippingStyle -> None, PlotRange -> {-10, 10}]
```

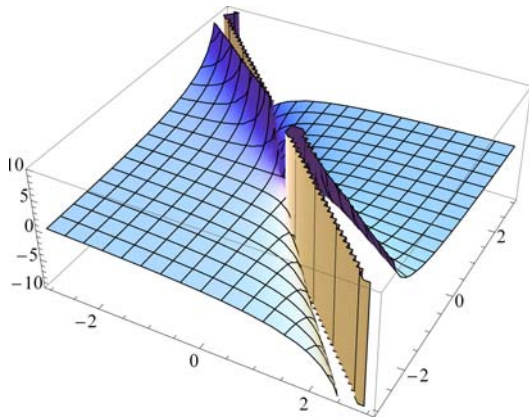


```
ContourPlot[funcio1321C[x, y], {x, -3, 3}, {y, -3, 3}]
```

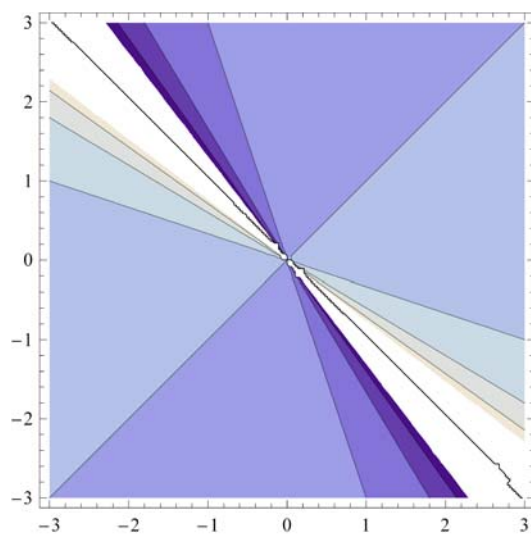


```
funcio1321D[x_, y_] := (x - y) / (x + y)
```

```
Plot3D[funcio1321D[x, y], {x, -3, 3}, {y, -3, 3}, ClippingStyle -> None, PlotRange -> {-10, 10}]
```



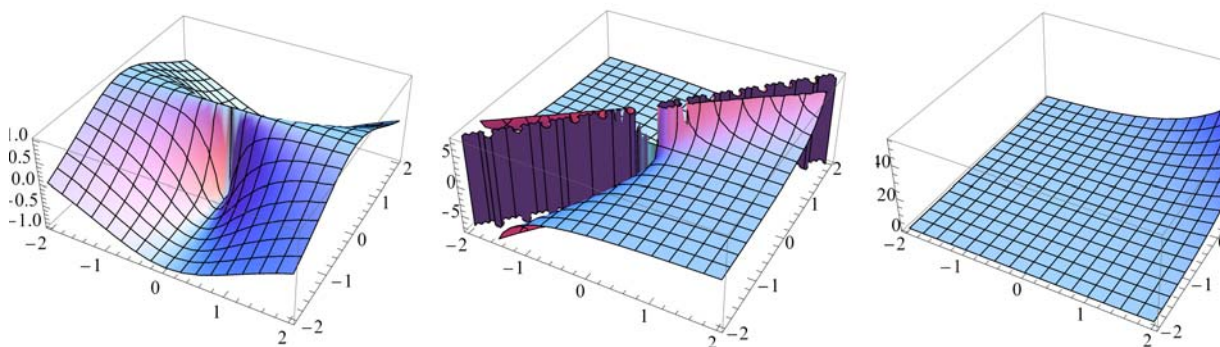
```
ContourPlot[funcio1321D[x, y], {x, -3, 3}, {y, -3, 3}]
```



Exercici 13.22

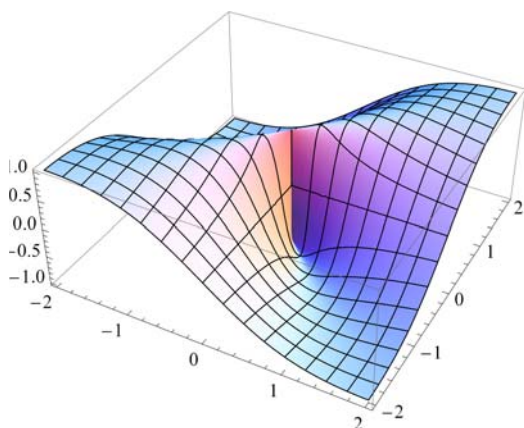
```
f1322component1[x_, y_] := (x^2 - y^2) / (x^2 + y^2)
f1322component2[x_, y_] := (x + y) / (x - y)
f1322component3[x_, y_] := E^(x + y)

GraphicsArray[{
  Plot3D[f1322component1[x, y], {x, -2, 2}, {y, -2, 2}],
  Plot3D[f1322component2[x, y], {x, -2, 2}, {y, -2, 2}, ClippingStyle -> None],
  Plot3D[f1322component3[x, y], {x, -2, 2}, {y, -2, 2}, PlotRange -> All]
}]
```



Exercici 13.23

```
f1323[x_, y_] := 2 x y / (x^2 + y^2)
Plot3D[f1323[x, y], {x, -2, 2}, {y, -2, 2}, PlotPoints -> 50, MaxRecursion -> 10]
```



Exercici 13.24

```
f1324[x_, y_] := (x + y) ((Sin[x])^2 / x + (Sin[y])^2 / y)
```

```
Show[{  
  Plot3D[f1324[x, y], {x, -2, 2}, {y, -2, 2}, PlotStyle -> Opacity[0.6], Mesh -> None],  
  ParametricPlot3D[{x, 0, (Sin[x])^2}, {x, -2, 2}, PlotStyle -> {Red, Thickness[0.01]}],  
  ParametricPlot3D[{0, y, (Sin[y])^2}, {y, -2, 2}, PlotStyle -> {Green, Thickness[0.01]}]  
}]
```

