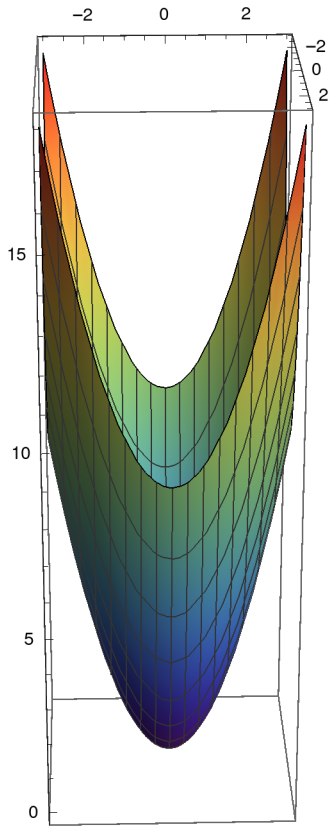
In[ ]:=

```
SetOptions[Plot3D(*Or whichever plot you desire*),
  ColorFunction → "Rainbow"(*One of many options*)];
SetOptions[ContourPlot(*Or whichever plot you desire*),
  ColorFunction → "Rainbow"(*One of many options*)];
SetOptions[RegionPlot(*Or whichever plot you desire*),
  ColorFunction → "BlueGreenYellow"(*One of many options*)];
```

In[ ]:=

```
(* Examples *)
Plot3D[x^2 + y^2, {x, -3, 3}, {y, -3, 3}, BoxRatios → Automatic]
```

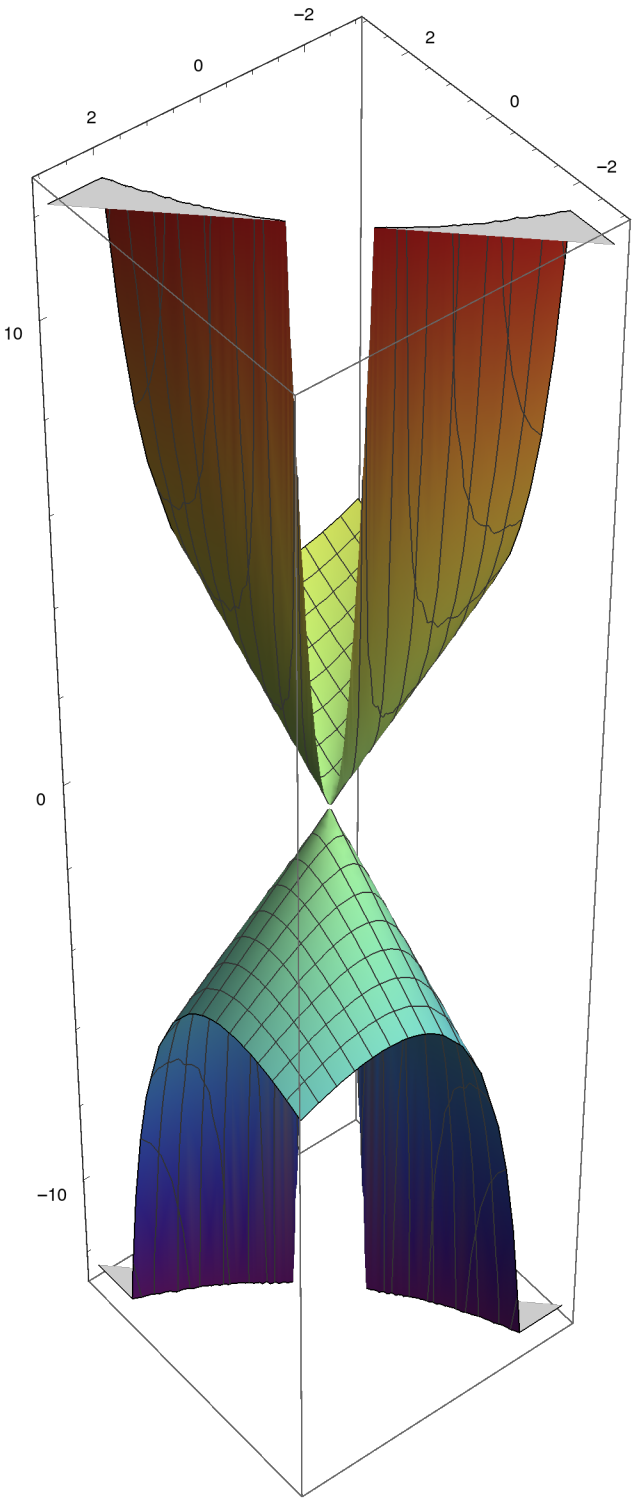
Out[ ]=



In[ ]:=
```
Plot3D[(x^2 + y^2)/(x - y), {x, -3, 3}, {y, -3, 3}, BoxRatios → Automatic]
```

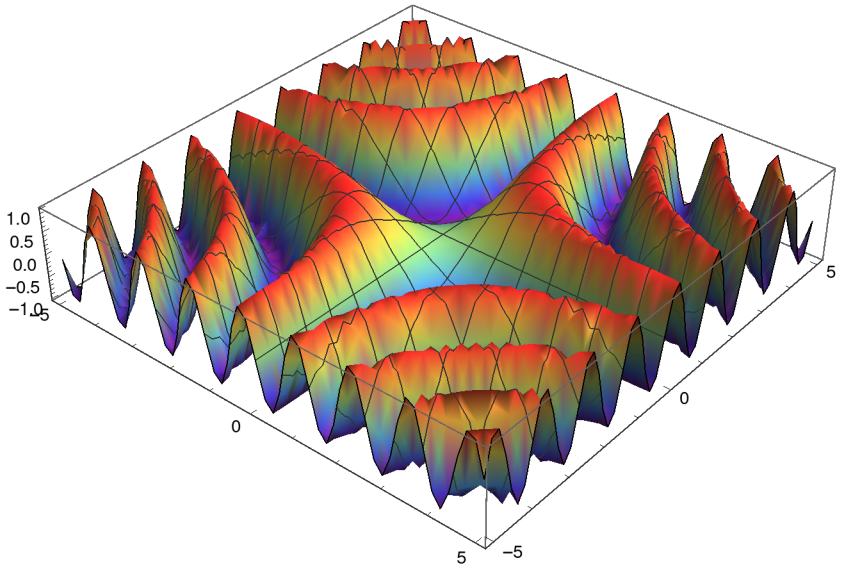
Power : Infinite expression $\frac{1}{0.}$ encountered.

Out[ ]=



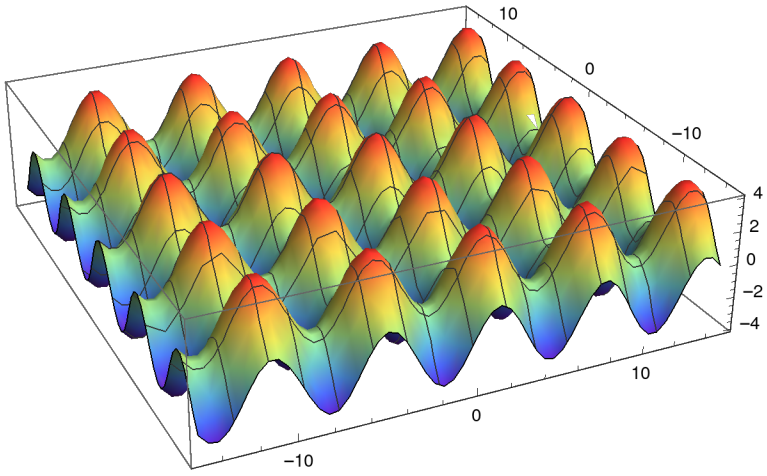
In[ ]:=
```
Plot3D[Sin[x * y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
```

Out[ ]=



In[ ]:=
```
(* Examples *)
Plot3D[2 Sin[x] + 2 Cos[y], {x, -15, 15}, {y, -15, 15}, BoxRatios → Automatic]
```

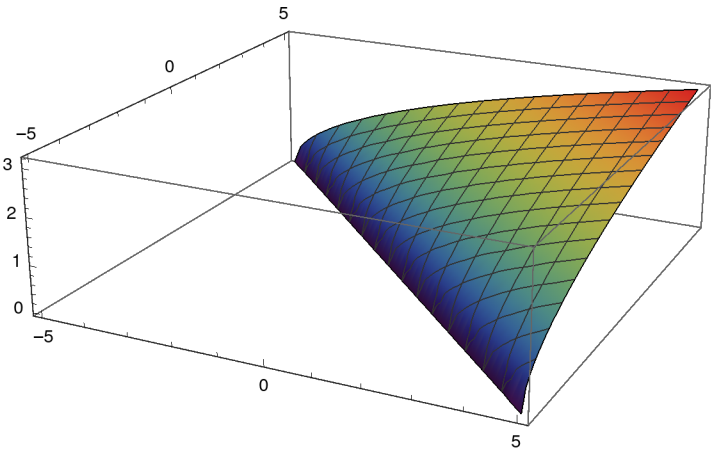
Out[ ]=




```
(*1*)
```

In[ ]:=
```
Plot3D[Sqrt[x + y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
```

Out[ ]=

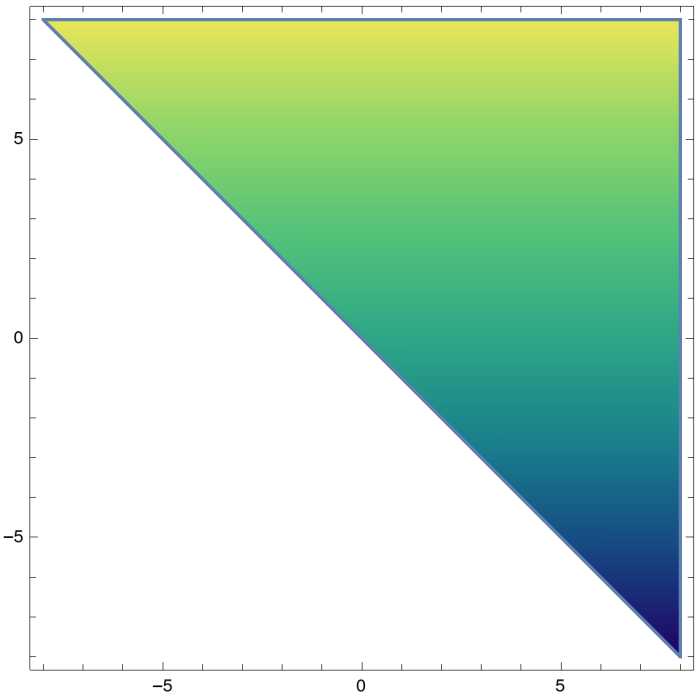


In[ ]:=
```
r1 = FunctionDomain[Sqrt[x + y], {x, y}]
```

Out[ ]=
```
x + y ≥ 0
```

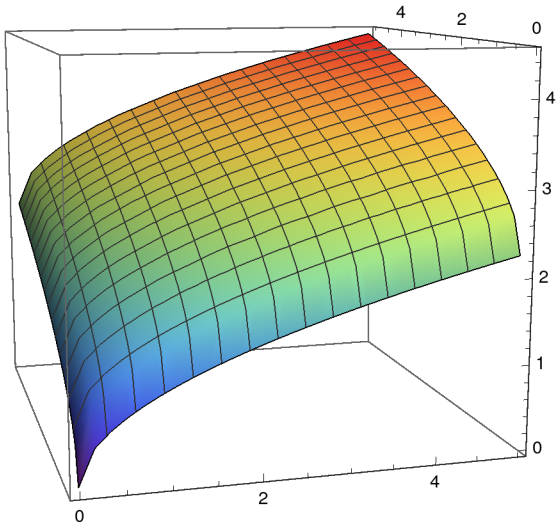
In[ ]:=
```
RegionPlot[r1, {x, -8, 8}, {y, -8, 8}]
```

Out[ ]=



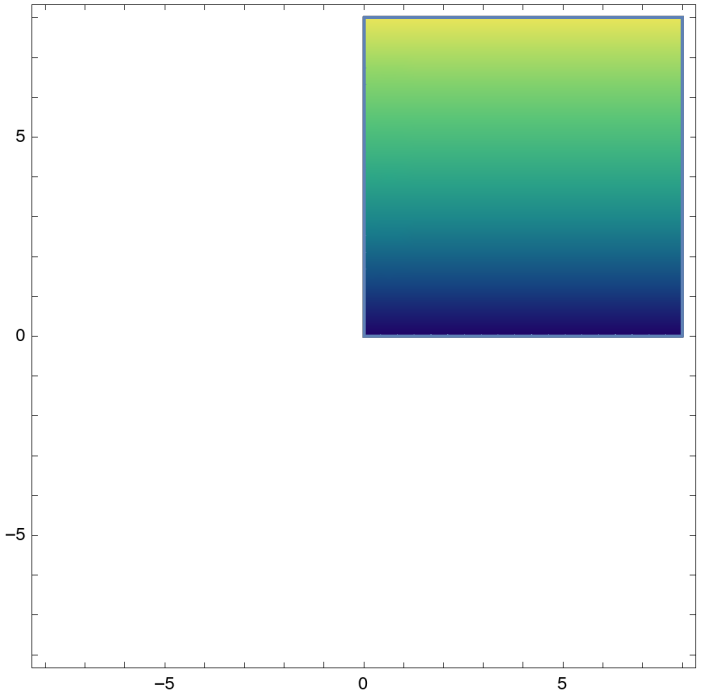
In[ ]:=
```
Plot3D[Sqrt[x] + Sqrt[y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[x] + Sqrt[y], {x, y}]
RegionPlot[r1, {x, -8, 8}, {y, -8, 8}]
```

Out[ ]=



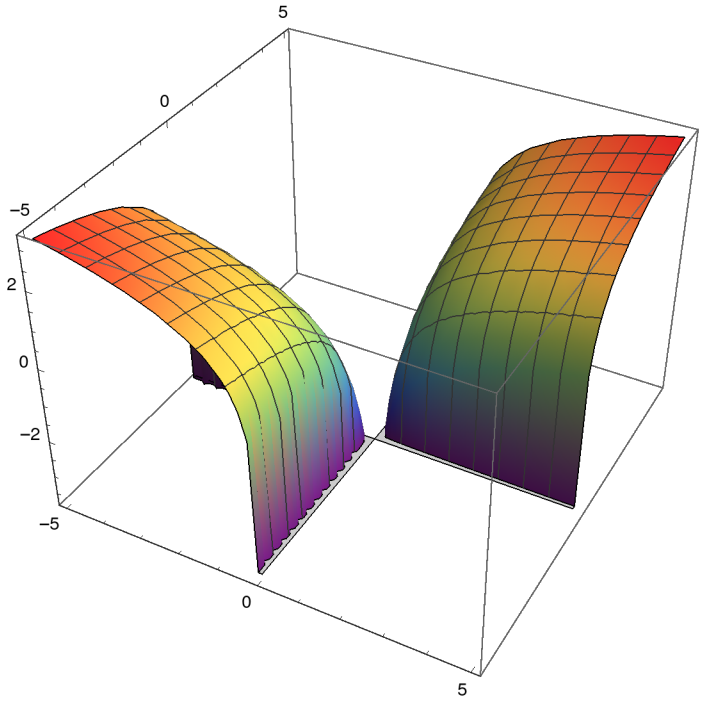
Out[ ]= $x \geq 0 \&\& y \geq 0$

Out[ ]=



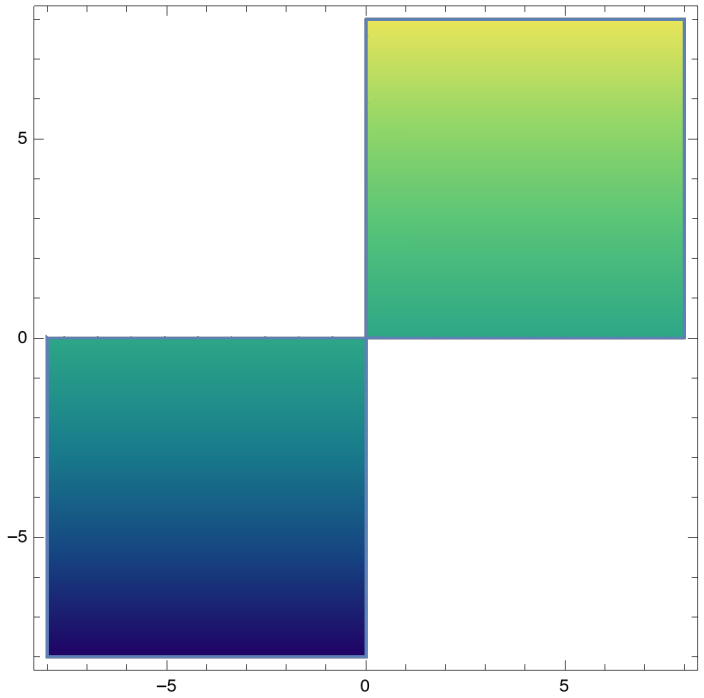
In[ ]:=
```
Plot3D[Log[x * y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Log[x * y], {x, y}]
RegionPlot[r1, {x, -8, 8}, {y, -8, 8}]
```

Out[ ]=



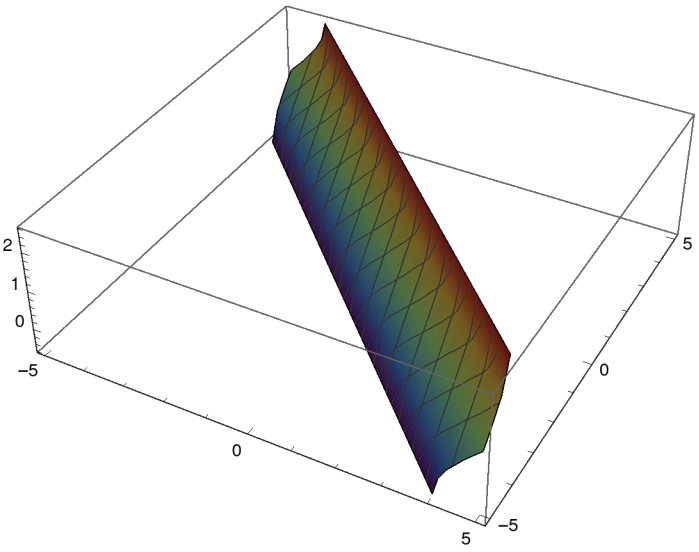
Out[ ]=
```
x ≠ 0 && y ≠ 0 && x y > 0
```

Out[ ]=



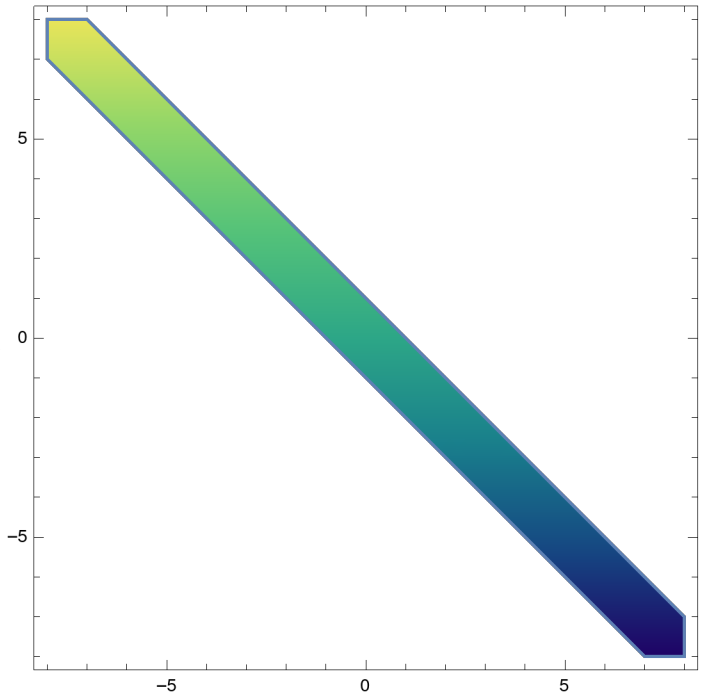
In[ ]:=
```
Plot3D[1 + ArcSin[x + y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[1 + ArcSin[x + y], {x, y}]
RegionPlot[r1, {x, -8, 8}, {y, -8, 8}]
```

Out[ ]=



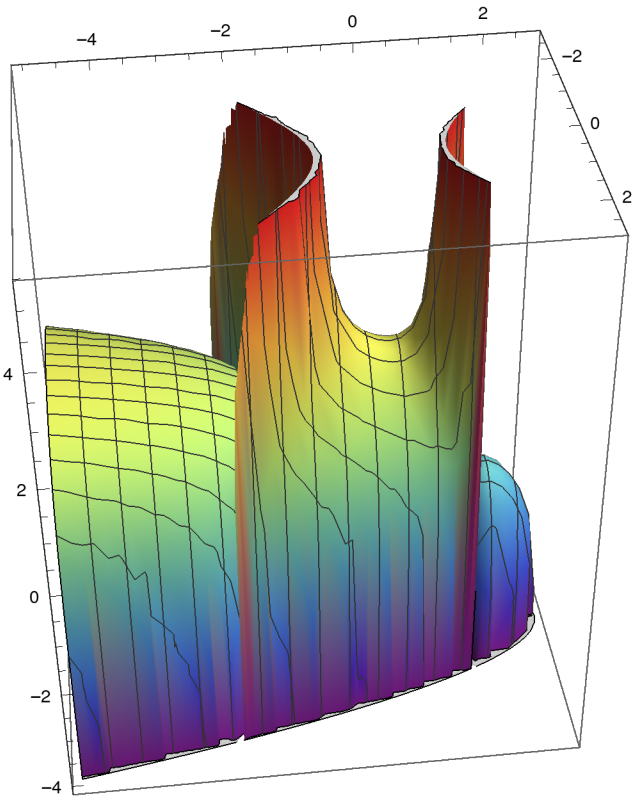
Out[ ]= $-1 \le x + y \le 1$

Out[ ]=



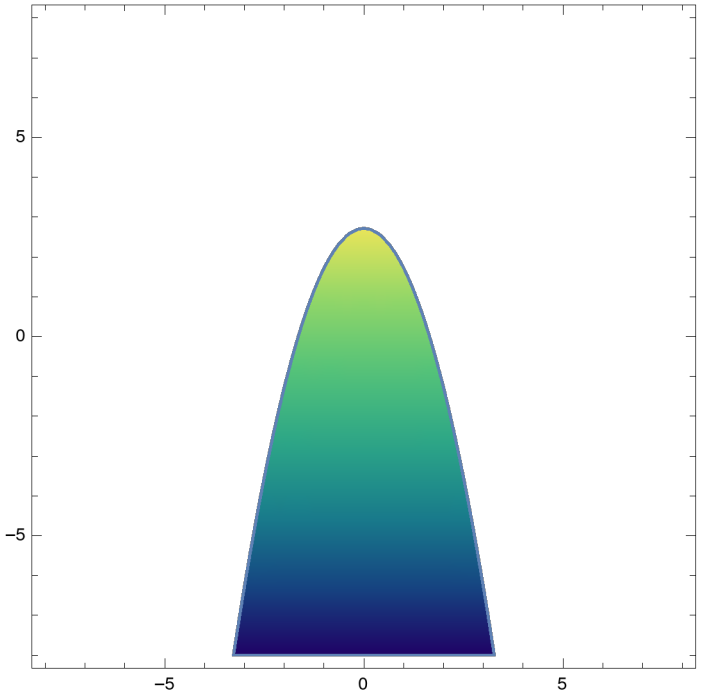
In[ ]:=
```
Plot3D[1 / (x ^ 2 - y ^ 2 + 1) + Log[E - y - x ^ 2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[1 / (x ^ 2 - y ^ 2 + 1) + Log[E - y - x ^ 2], {x, y}]
RegionPlot[r1, {x, -8, 8}, {y, -8, 8}]
```

Out[ ]=



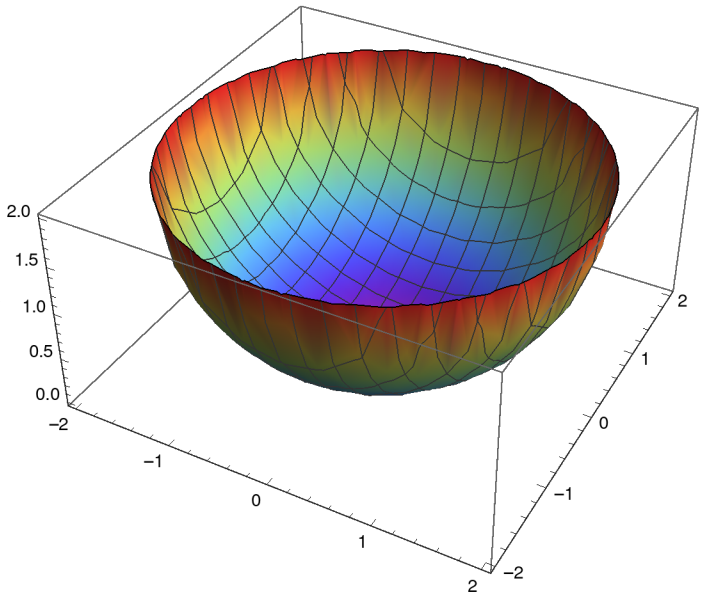
Out[ ]= $x^2 + y < e \&\& x^2 - y^2 \neq -1$

Out[ ]=

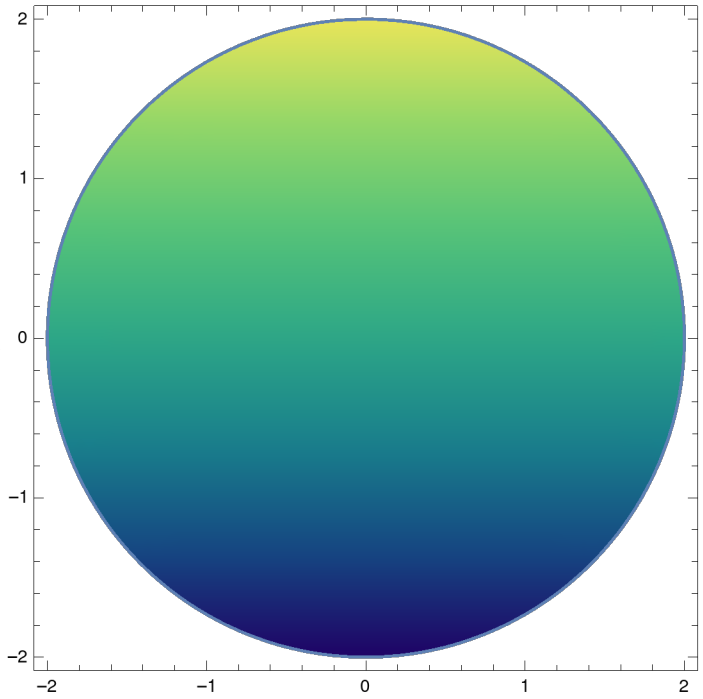


In[ ]:=
```
Plot3D[2 - Sqrt[4 - x^2 - y^2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[2 - Sqrt[4 - x^2 - y^2], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=

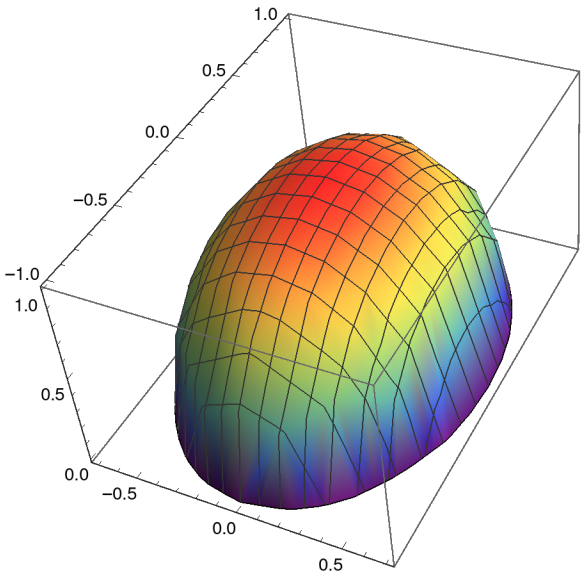


Out[ ]= $x^2 + y^2 \leq 4$



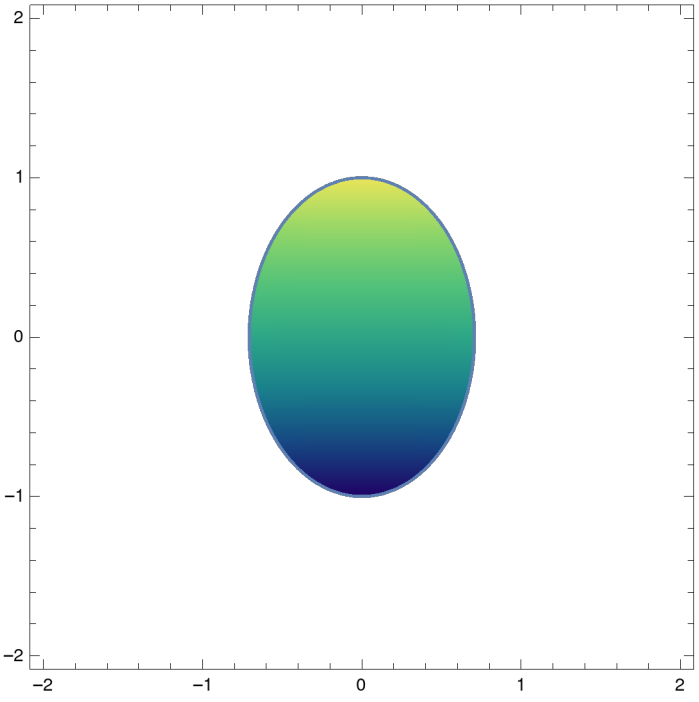
```
Plot3D[Sqrt[1 - 2 x^2 - y^2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[1 - 2 x^2 - y^2], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=



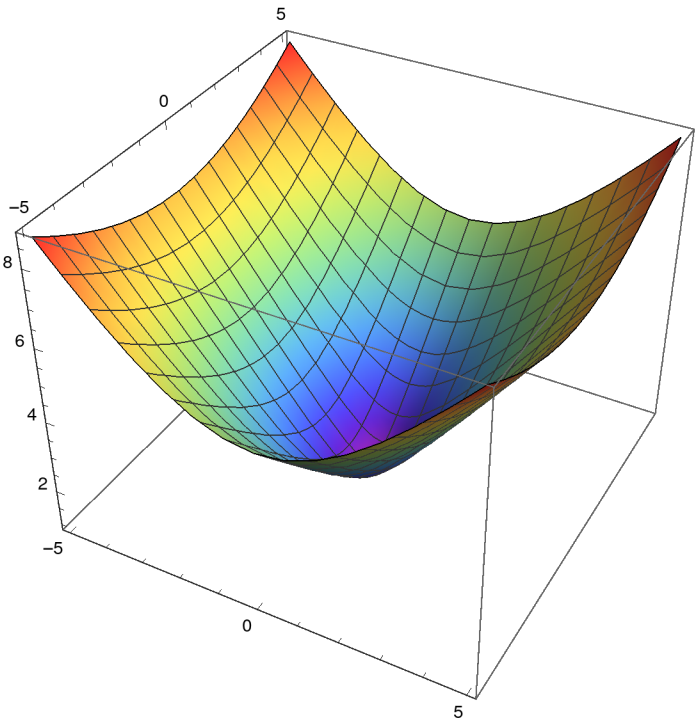
Out[ ]= $2\,x^2 + y^2 \le 1$

Out[ ]=



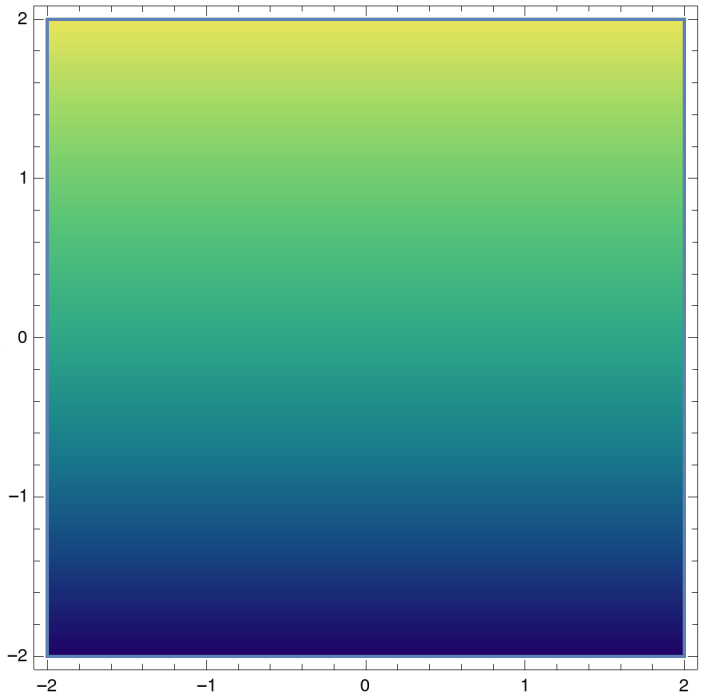
In[ ]:=
```
Plot3D[Sqrt[1 + 2 x^2 + y^2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[1 + 2 x^2 + y^2], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=



Out[ ]= True

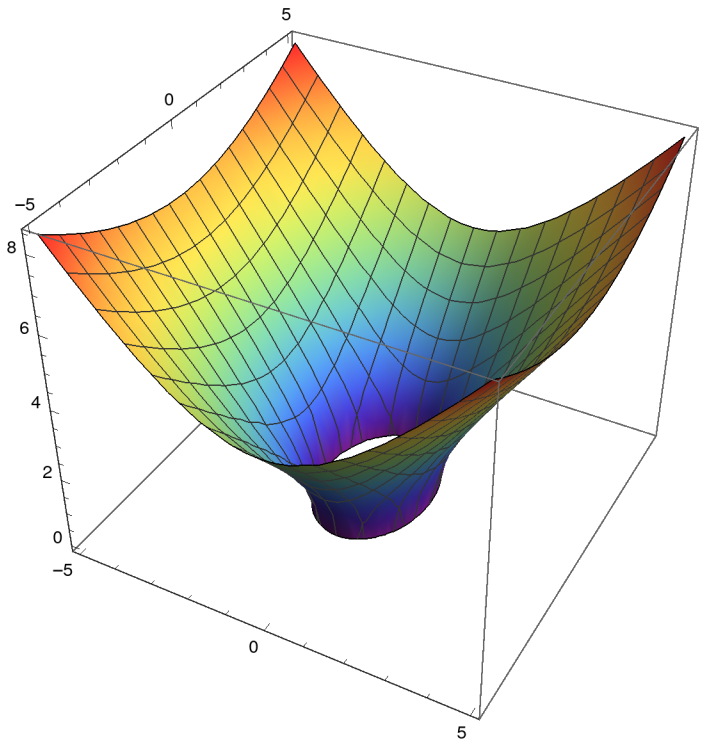
Out[ ]=



In[ ]:=

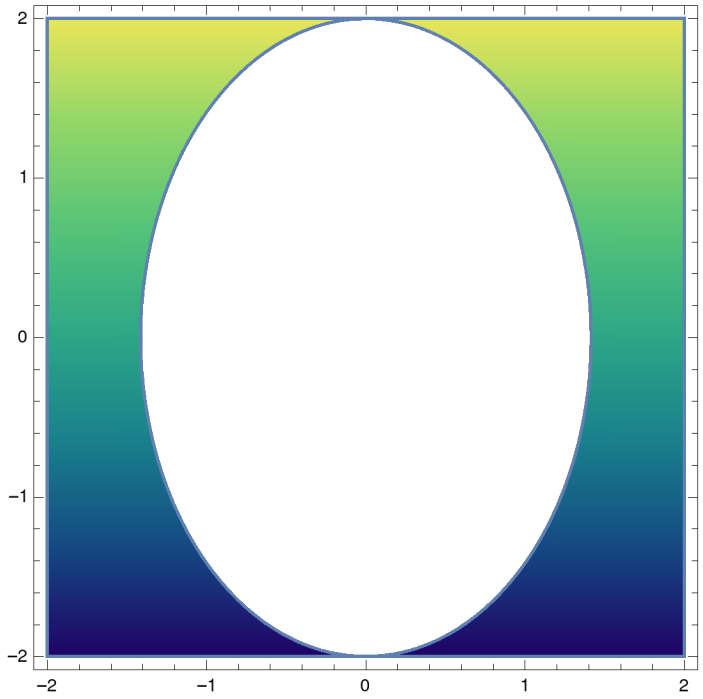
```
Plot3D[Sqrt[-4 + 2 x^2 + y^2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[-4 + 2 x^2 + y^2], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=



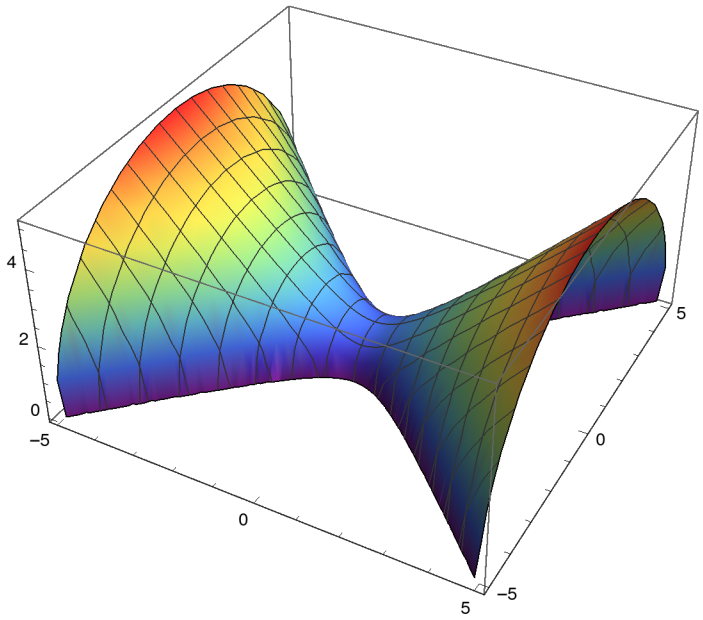
Out[ ]= $2x^2 + y^2 \geq 4$

Out[ ]=

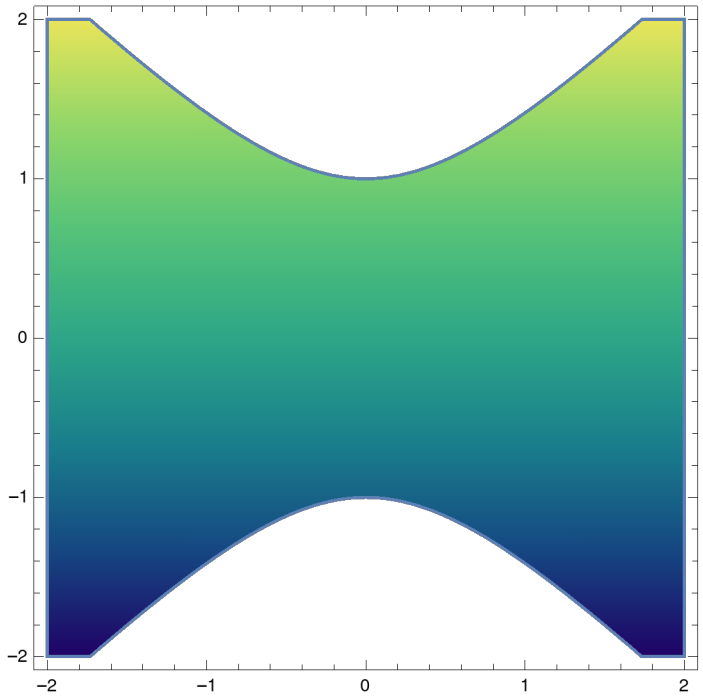


In[ ]:=
```
Plot3D[Sqrt[1 + x^2 - y^2], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[1 + x^2 - y^2], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=

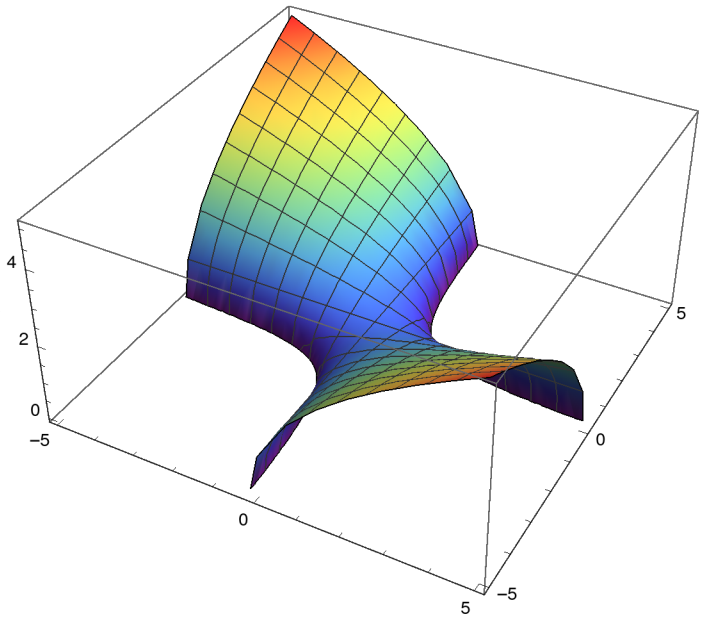


Out[ ]= $x^2 - y^2 \geq -1$



In[ ]:=
```
Plot3D[Sqrt[1 - x * y], {x, -5, 5}, {y, -5, 5}, BoxRatios → Automatic]
r1 = FunctionDomain[Sqrt[1 - x * y], {x, y}]
RegionPlot[r1, {x, -2, 2}, {y, -2, 2}]
```

Out[ ]=



Out[ ]= $x\,y \le 1$

Out[ ]=