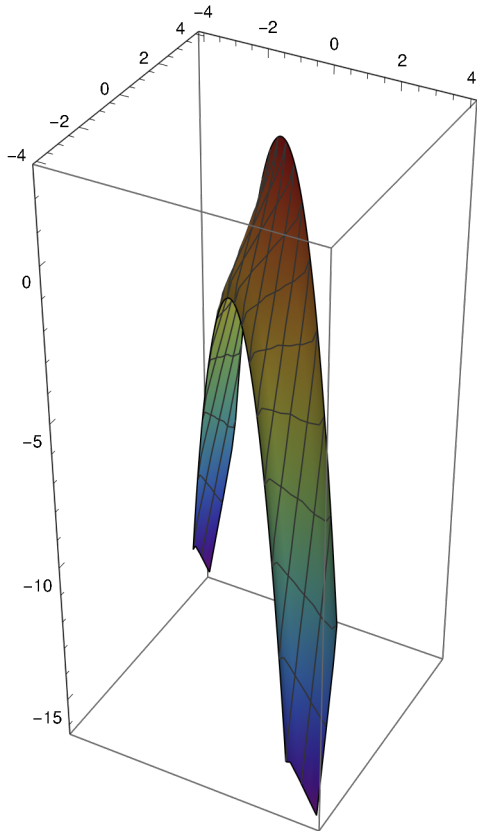
In[25]:=
```
SetOptions[Plot3D(*Or whichever plot you desire*),
  ColorFunction → "Rainbow"(*One of many options*)];
SetOptions[ContourPlot(*Or whichever plot you desire*),
  ColorFunction → "Rainbow"(*One of many options*)];

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

Out[9]= 1

(*1*)

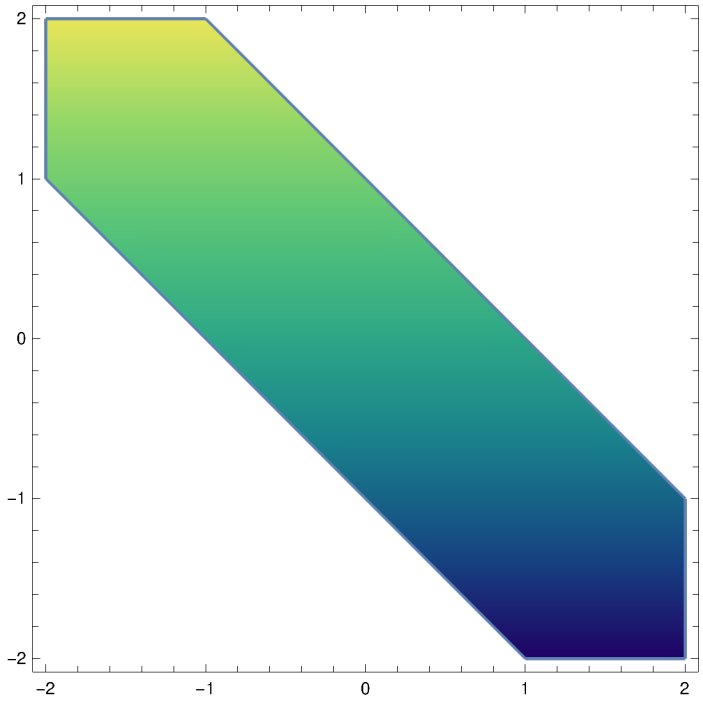
In[11]:=
```
Plot3D[ArcSin[x + y] + ArcTan[x + y] + x * y, {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
```

Out[11]=



In[12]:=
```
RegionPlot[-1 < x + y < 1, {x, -2, 2}, {y, -2, 2}, AspectRatio → Automatic]
```

Out[12]=



In[4]:=
```
Plot3D[Log[x / (Abs[x] - Abs[y])], {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
```

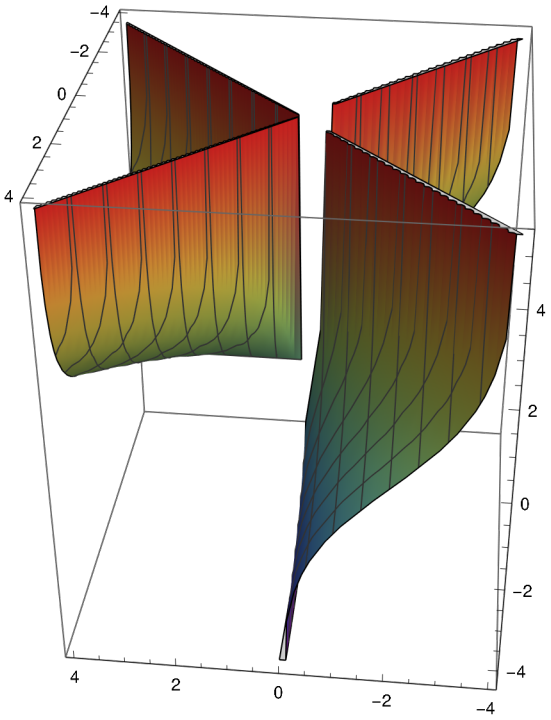
Power : Infinite expression $\frac{1}{0.}$ encountered .

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

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

General : Further output of Power::infy will be suppressed during this calculation .

Out[4]=



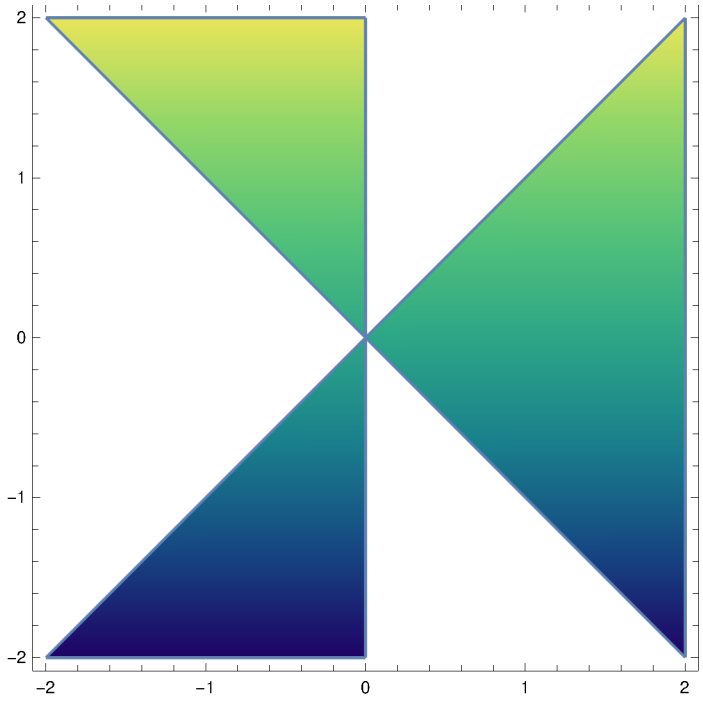
In[10]:=
```
RegionPlot[x / (Abs[x] - Abs[y]) > 0, {x, -2, 2}, {y, -2, 2}, AspectRatio → Automatic]
```

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

Greater : Invalid comparison with ComplexInfinity attempted .

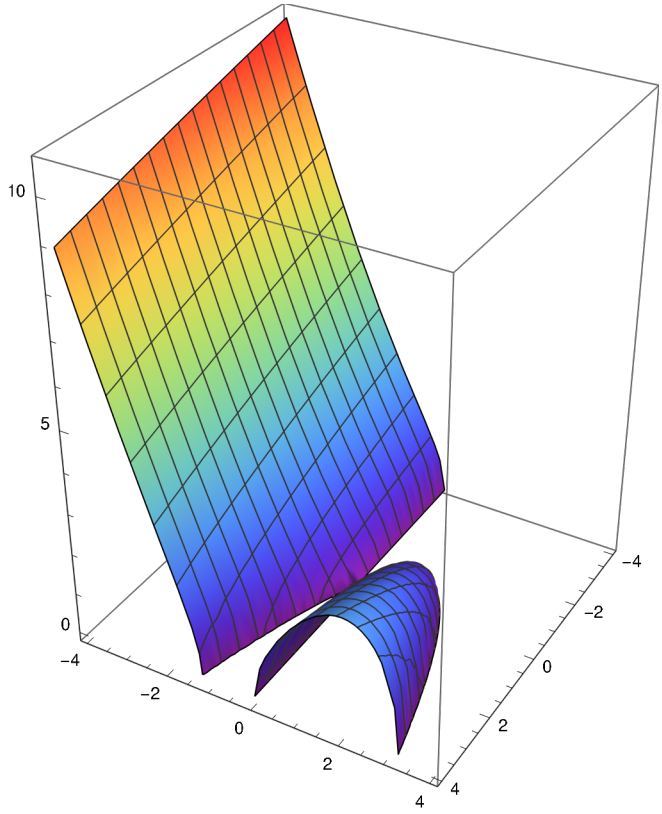
Greater : Invalid comparison with ComplexInfinity attempted .

Out[10]=

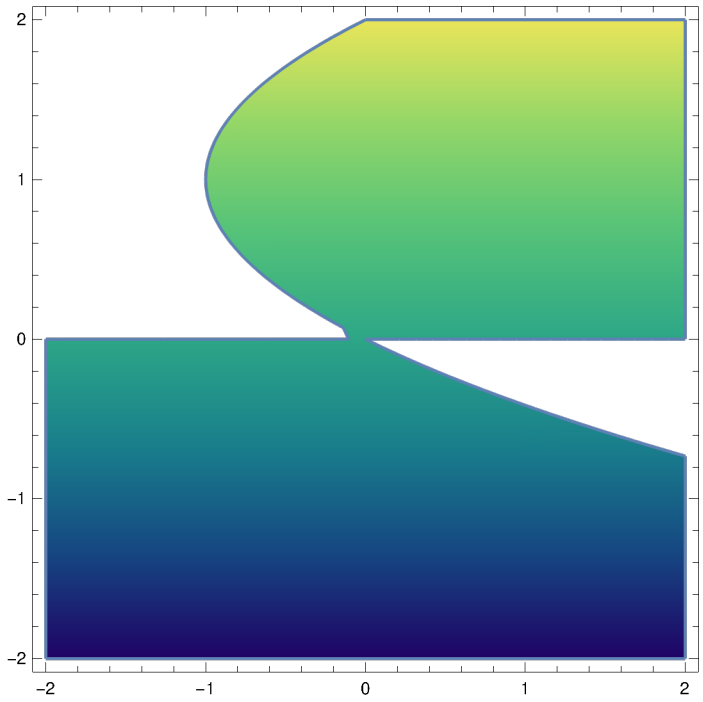


In[13]:=
```
Plot3D[Sqrt[x * y - y^3 + 2 y^2], {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
RegionPlot[x * y - y^3 + 2 y^2 > 0, {x, -2, 2}, {y, -2, 2}, AspectRatio → Automatic]
```

Out[13]=

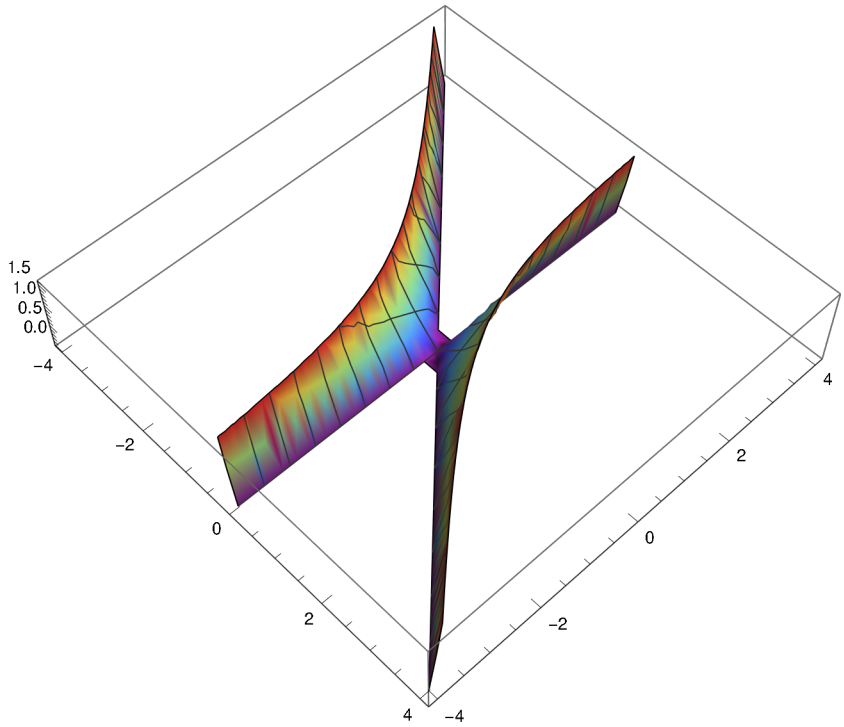


Out[14]=

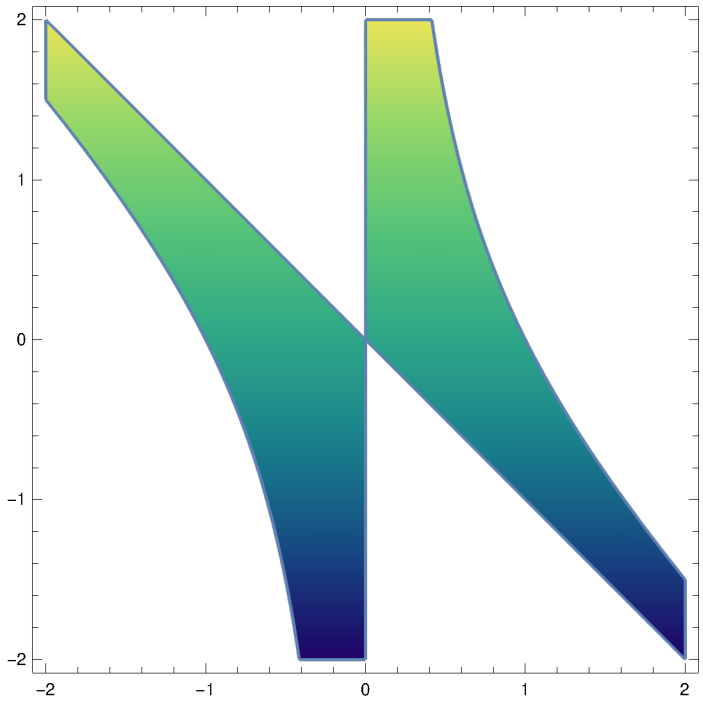


In[19]:=
```
Plot3D[ArcSin[Sqrt[x (x + y)]], {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
RegionPlot[x (x + y) > 0 && -1 < x (x + y) < 1, {x, -2, 2}, {y, -2, 2}, AspectRatio → Automatic]
```

Out[19]=



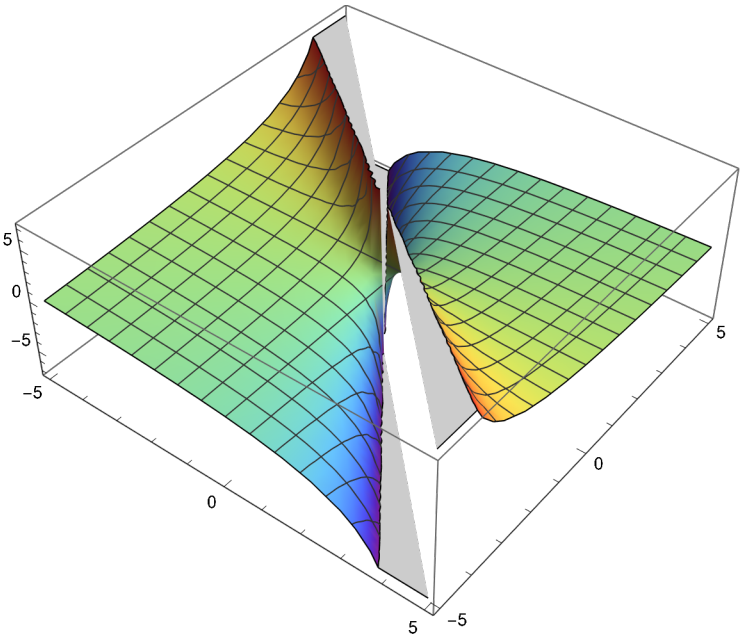
Out[20]=

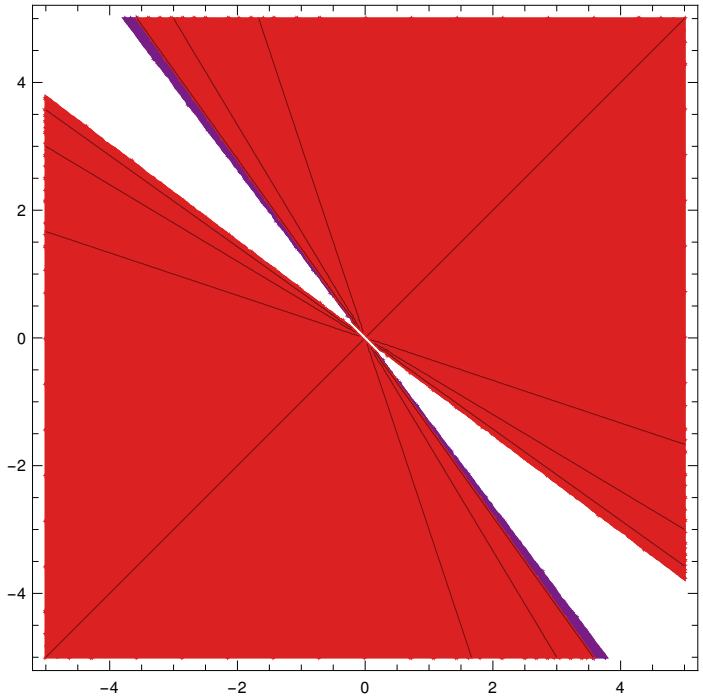



```
(*2*)
```

In[27]:=
```
f = (x - y) / (x + y)
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]
```

Out[27]=
$$\frac{x - y}{x + y}$$

Out[28]=


Out[29]=


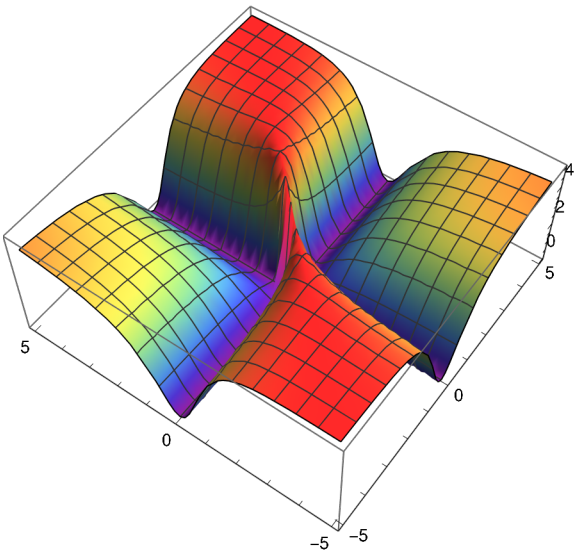
In[49]:=

```
f = 5 (x ^ 2 * y ^ 2) / (x ^ 2 * y ^ 2 + (x - y) ^ 2)
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]
```

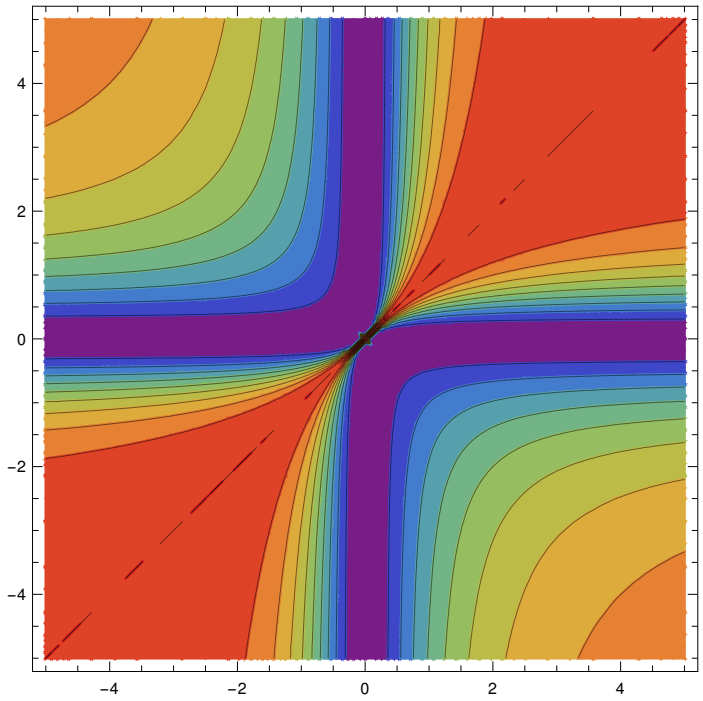
Out[49]=

$$\frac{5\,x^2\,y^2}{(x-y)^2+x^2\,y^2}$$

Out[50]=



Out[51]=



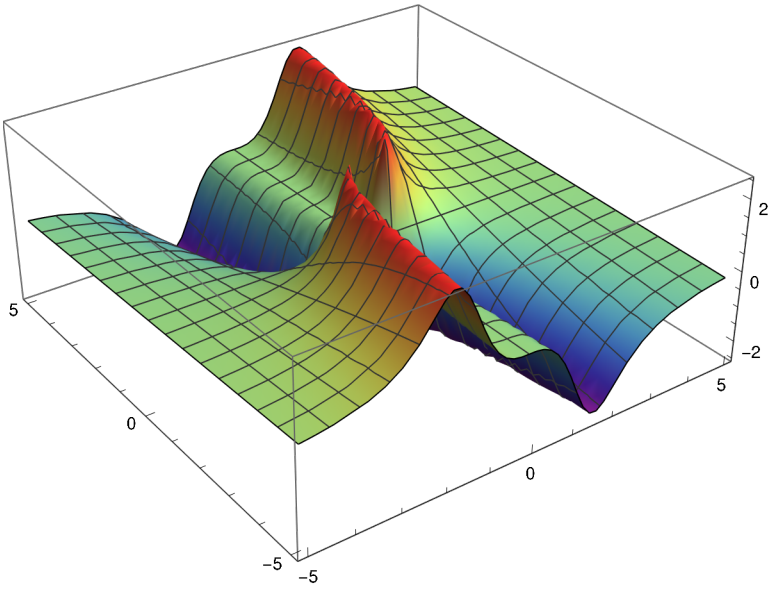
In[52]:=

```
f = 5 (x ^ 3 * y) / (x ^ 6 + y ^ 2)
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]
```

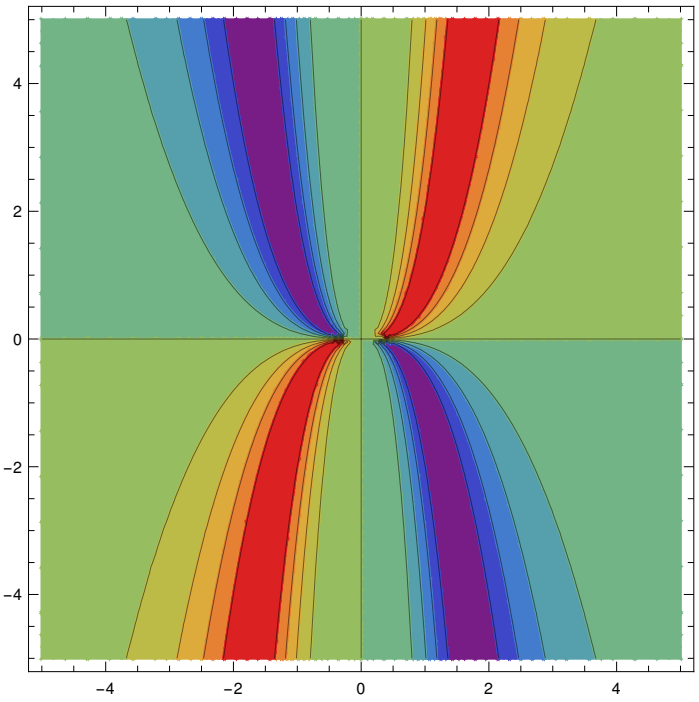
Out[52]=

$$\frac{5\,x^3\,y}{x^6 + y^2}$$

Out[53]=



Out[54]=



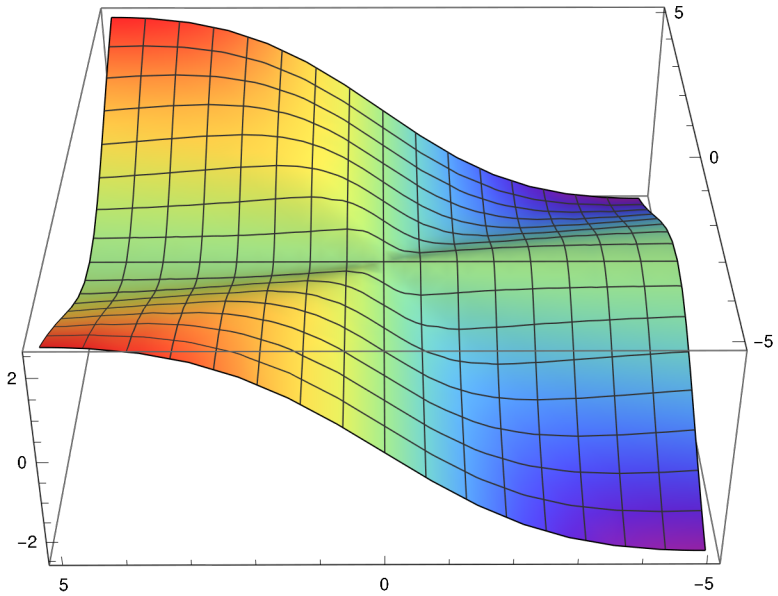
In[38]:=

```
f = (x ^ 2 * y) / (x ^ 2 + y ^ 2)
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]

Plot3D[(x - y ^ 2) / (x + y), {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
```

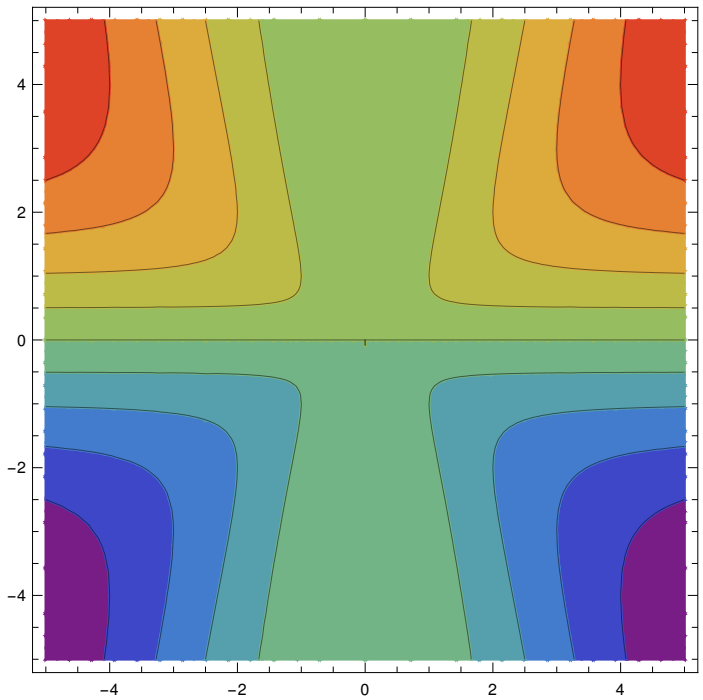
Out[38]=

$$\frac{x^2\, y}{x^2 + y^2}$$

Out[39]=



Out[40]=



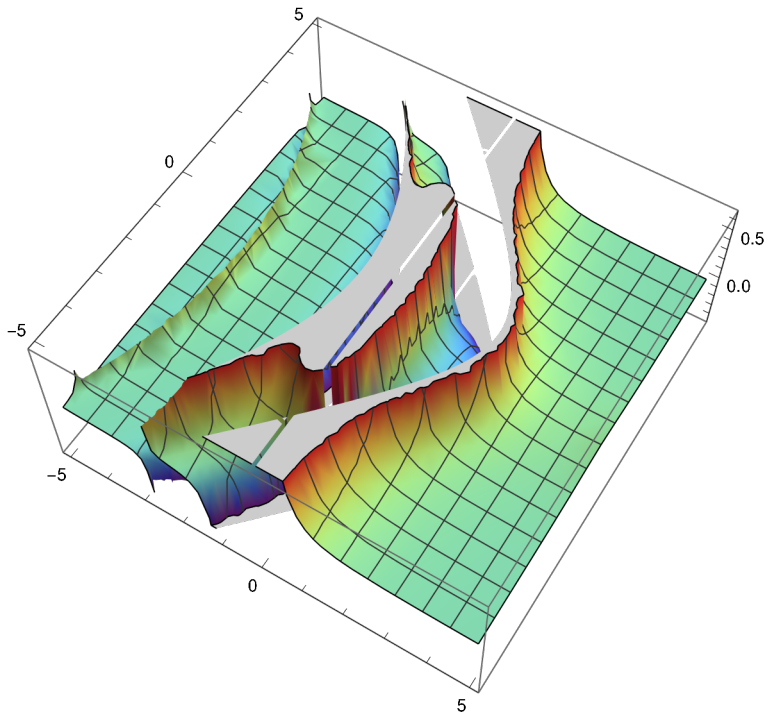
In[42]:=

```
f = (Tan[Sqrt[(x - 4) ^ 2 - y ^ 2]]) / (x ^ 2 Sqrt[(x - 4) ^ 2 - y ^ 2])
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]

Plot3D[(x - y ^ 2) / (x + y), {x, -4, 4}, {y, -4, 4}, BoxRatios → Automatic]
```

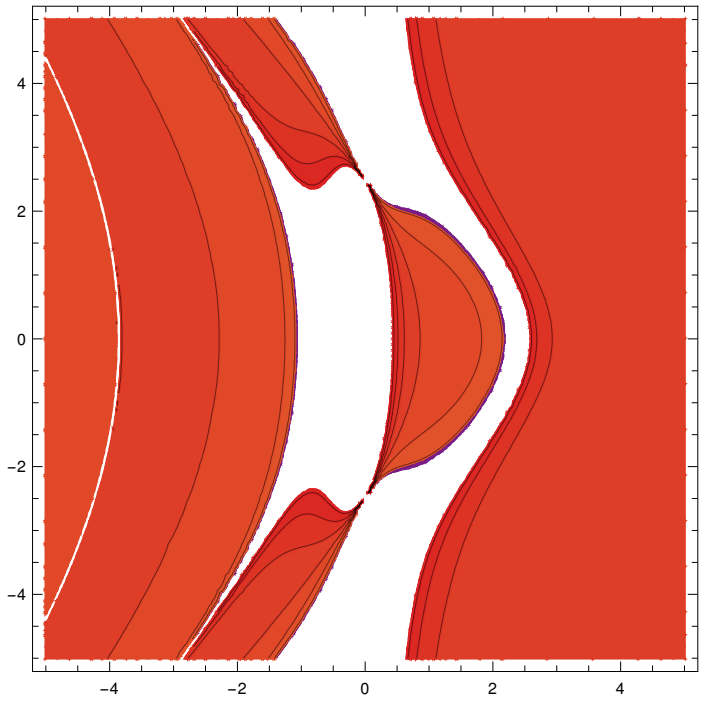
Out[42]=

$$\frac{\text{Tan}\left[\sqrt{(-4+x)^2-y^2}\right]}{x^2\,\sqrt{(-4+x)^2-y^2}}$$

Out[43]=



Out[44]=

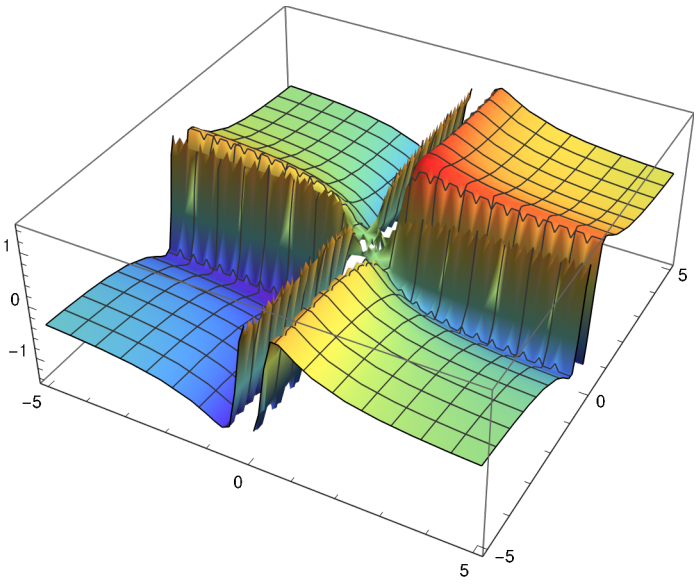


In[46]:=

```
f = (x + y) * Sin[1 / x] * Sin[1 / y]
Plot3D[f, {x, -5, 5}, {y, -5, 5}]
ContourPlot[f, {x, -5, 5}, {y, -5, 5}]
```

Out[46]= $(x + y)\,\text{Sin}\left[\frac{1}{x}\right] \times \text{Sin}\left[\frac{1}{y}\right]$

Out[47]=



Out[48]=