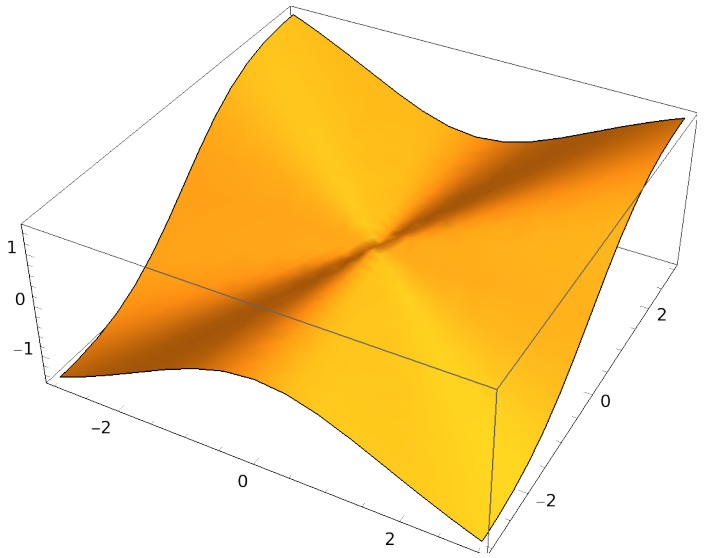
Controlling the mest lines :

Mesh → None – use no mesh lines.
All – use mesh lines in all direction.

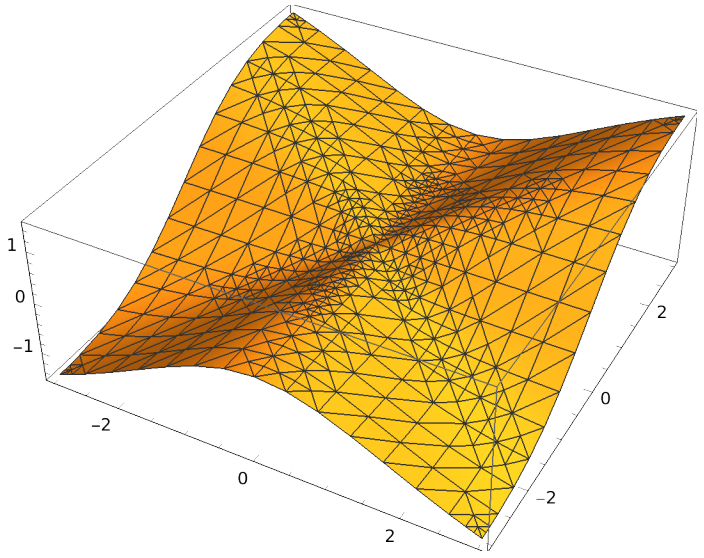
In[1]:=
```
Plot3D[x^2 y/(x^2+y^2), {x, -3, 3}, {y, -3, 3}, Mesh → None]
```

Out[1]=



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

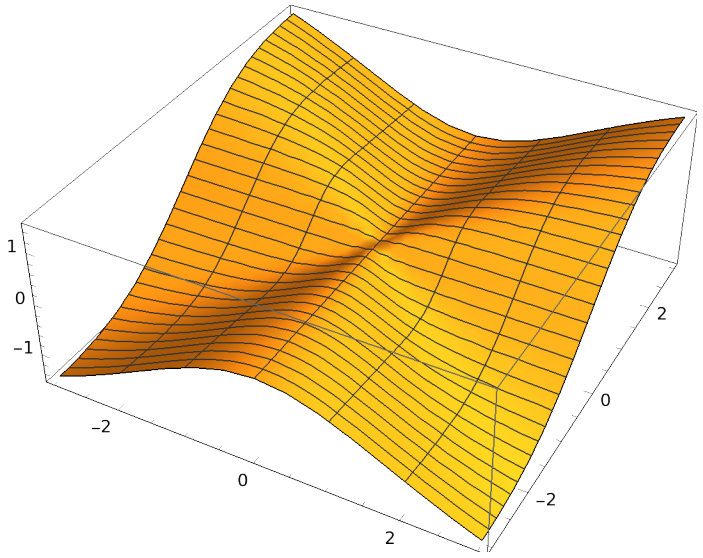
Out[2]=



Mesh → {5, 30} –
sets 5 mesh lines in x direction and 30 meshlines in the y direction.

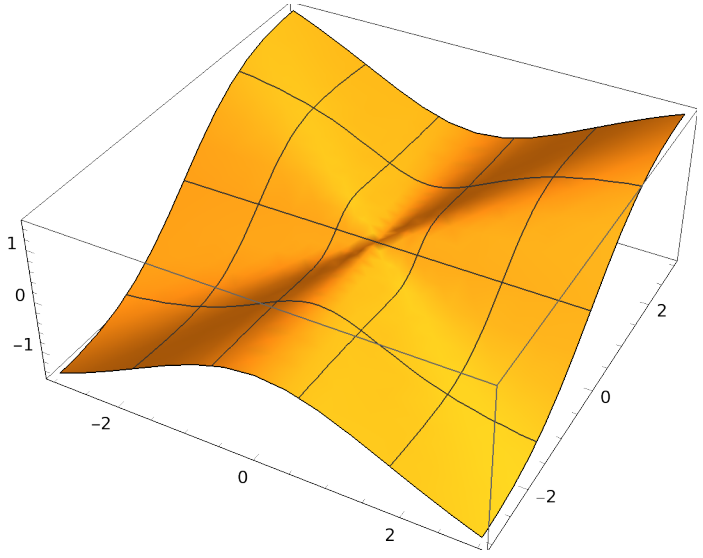
In[3]:=
```
Plot3D[(x^2 y)/(x^2 + y^2), {x, -3, 3}, {y, -3, 3}, Mesh → {5, 30}]
```

Out[3]=



In[4]:=
```
Plot3D[(x^2 y)/(x^2 + y^2), {x, -3, 3}, {y, -3, 3}, Mesh → {4, 3}]
```

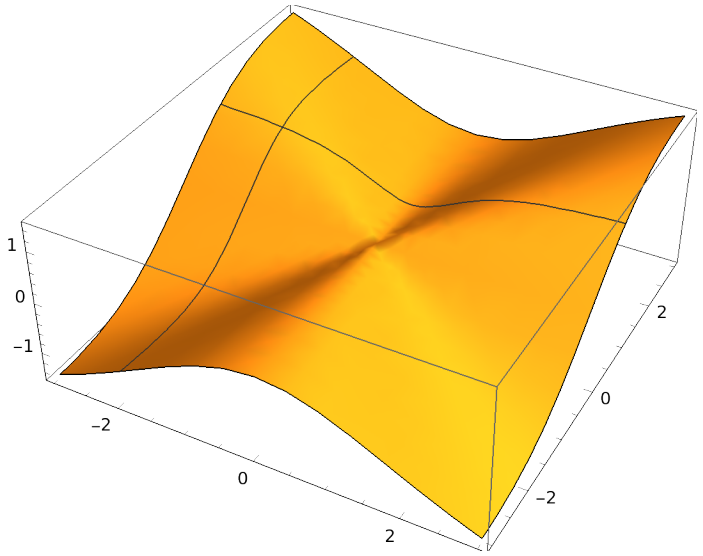
Out[4]=



Mesh → {{−2}, {1}} sets one meshline at x = −2 and another at y = 1.

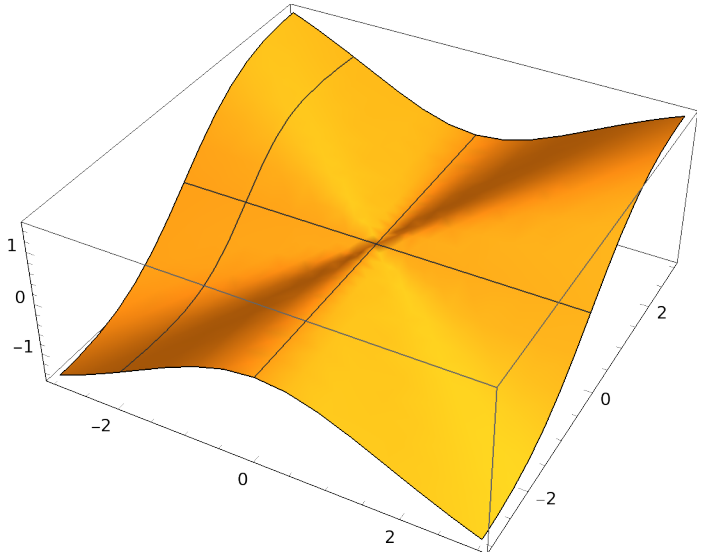
In[5]:=
```
Plot3D[(x^2 y)/(x^2+y^2), {x, -3, 3}, {y, -3, 3}, Mesh → {{-2}, {1}}]
```

Out[5]=



In[6]:=
```
Plot3D[(x^2 y)/(x^2+y^2), {x, -3, 3}, {y, -3, 3}, Mesh → {{-2, 0}, 1}]
```

Out[6]=

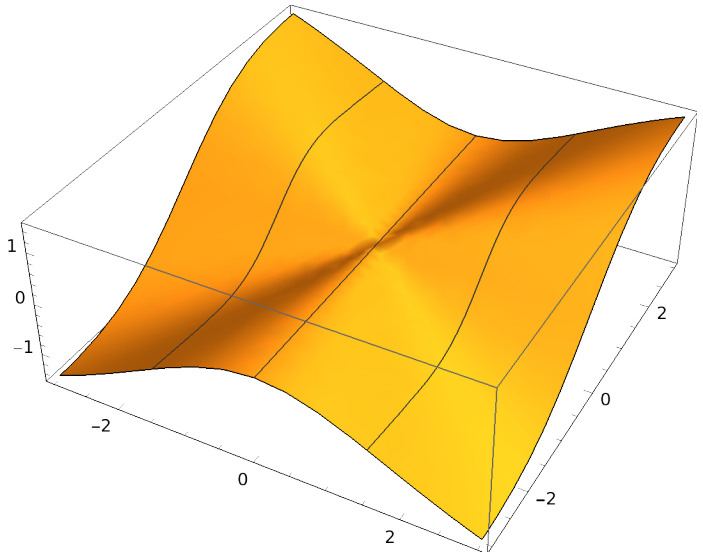


MeshFunctions → is an option for plotting functions that specifies functions to use to determine the placement of mesh divisions.

MeshFunctions → {#1 &} specifies meshlines for the x axis.

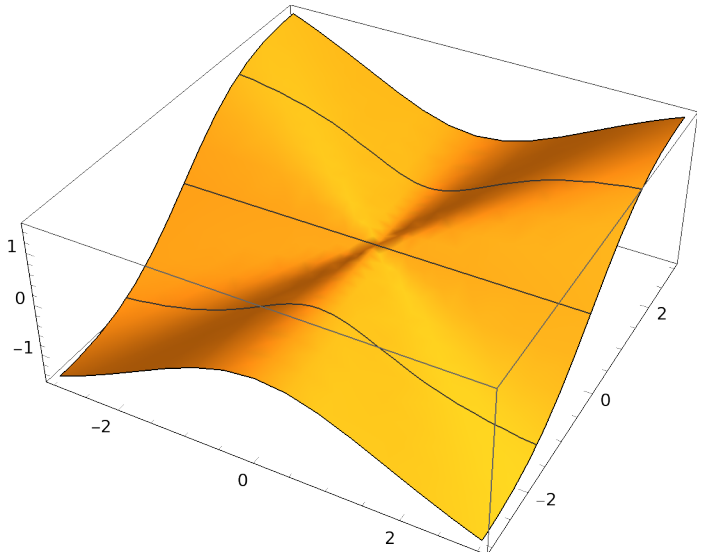
In[7]:=
```
Plot3D[(x^2 y)/(x^2 + y^2), {x, -3, 3}, {y, -3, 3}, MeshFunctions → {#1 &}, Mesh → 3]
```

Out[7]=



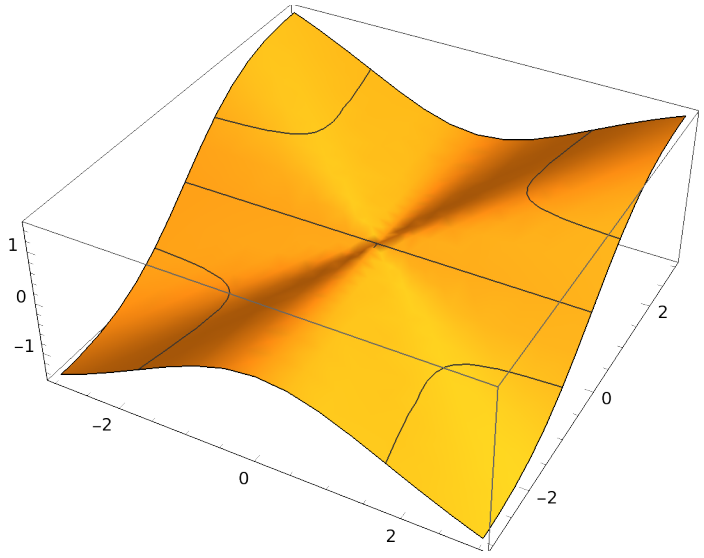
In[9]:=
```
Plot3D[(x^2 y)/(x^2 + y^2), {x, -3, 3}, {y, -3, 3}, MeshFunctions → {#2 &}, Mesh → 3]
```

Out[9]=



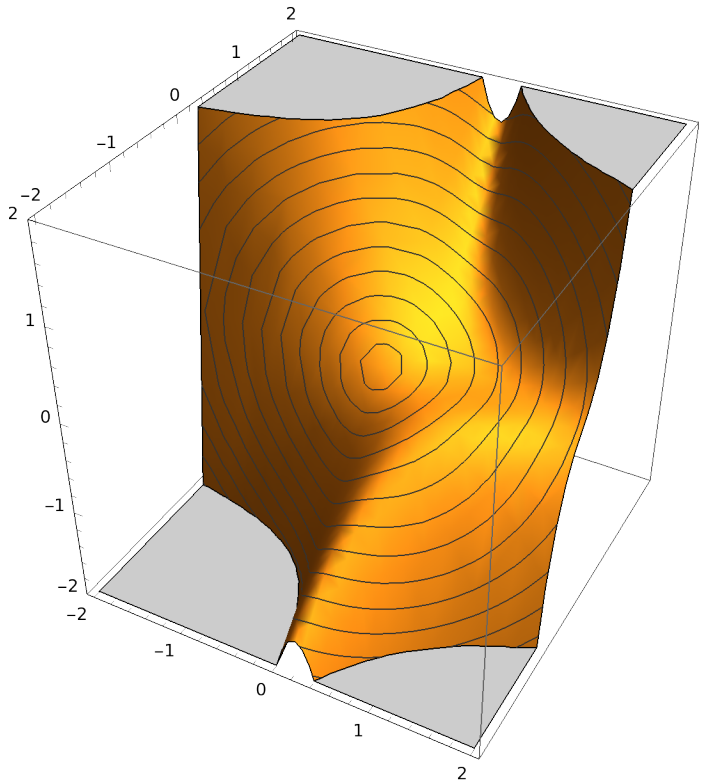
In[10]:=
```
Plot3D[(x^2 y)/(x^2 + y^2), {x, -3, 3}, {y, -3, 3}, MeshFunctions → {#3 &}, Mesh → 3]
```

Out[10]=



In[12]:=
```
Plot3D[(x^2 y^3) + (x - 1)^2 y, {x, -2, 2}, {y, -2, 2},
 MeshFunctions → {Norm[{#1, #2, #3}] &}, PlotRange → 2, BoxRatios → 1]
```

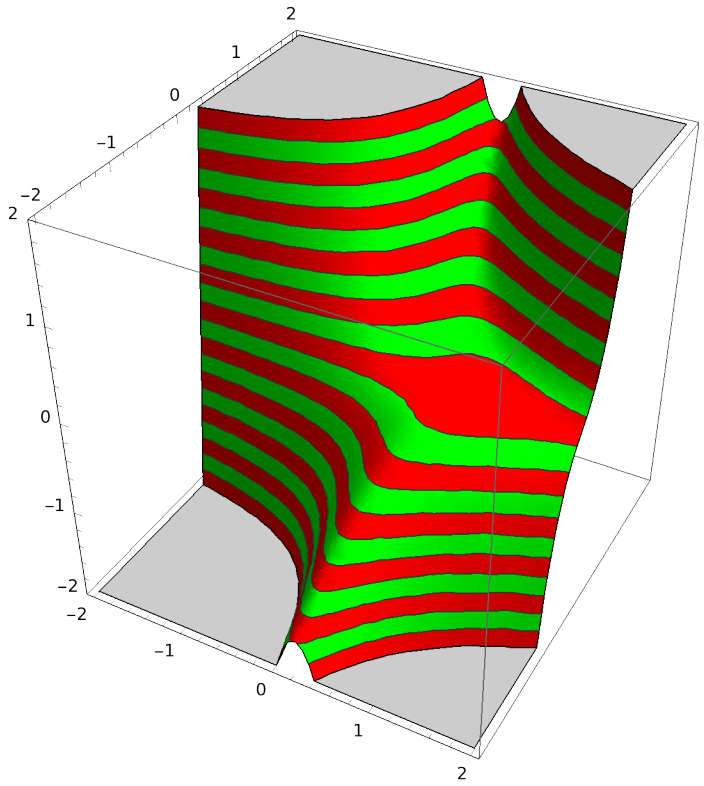
Out[12]=



MeshShading – is the option that allows the
regions b/w the mesh lines to recieve specific colors.
MeshShading → {Red, Green} –
sets red and green colors in the meshlines alternately.

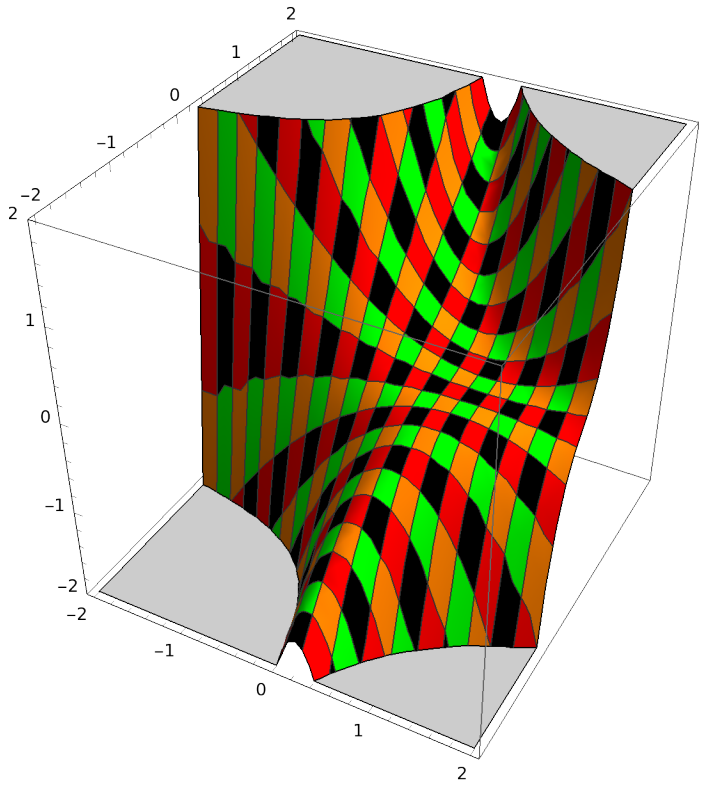
In[18]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &}, Mesh → 20,
 MeshShading → {Red, Green}, PlotRange → 2, BoxRatios → 1, Lighting → "Neutral"]
```

Out[18]=



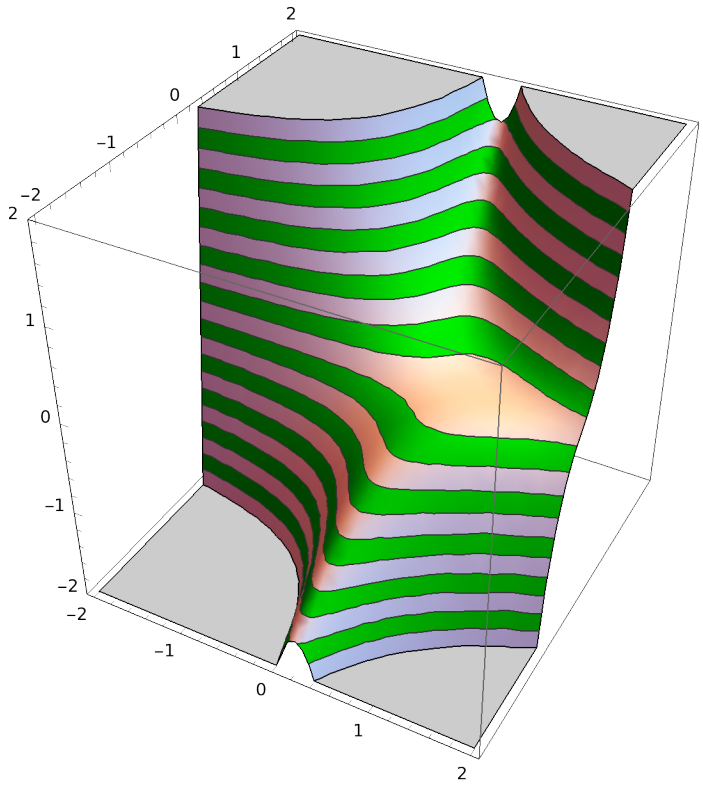
In[38]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2},
 Mesh → 20, MeshShading → {{Red, Black}, {Orange, Green}},
 PlotRange → 2, BoxRatios → 1, Lighting → "Neutral"]
```

Out[38]=



In[16]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &}, Mesh → 20,
 MeshShading → {White, Green}, PlotRange → 2, BoxRatios → 1, Lighting → Automatic]
```

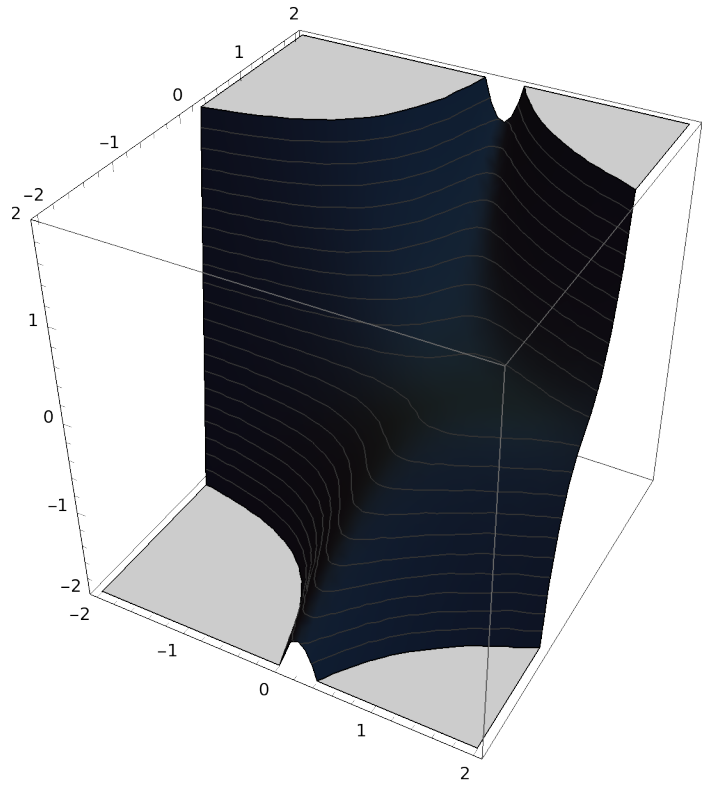
Out[16]=



ColorData[" StarryNightColors "] – is the color gradient function that takes argument as ' t ' where 0 ≤ t ≤ 1.

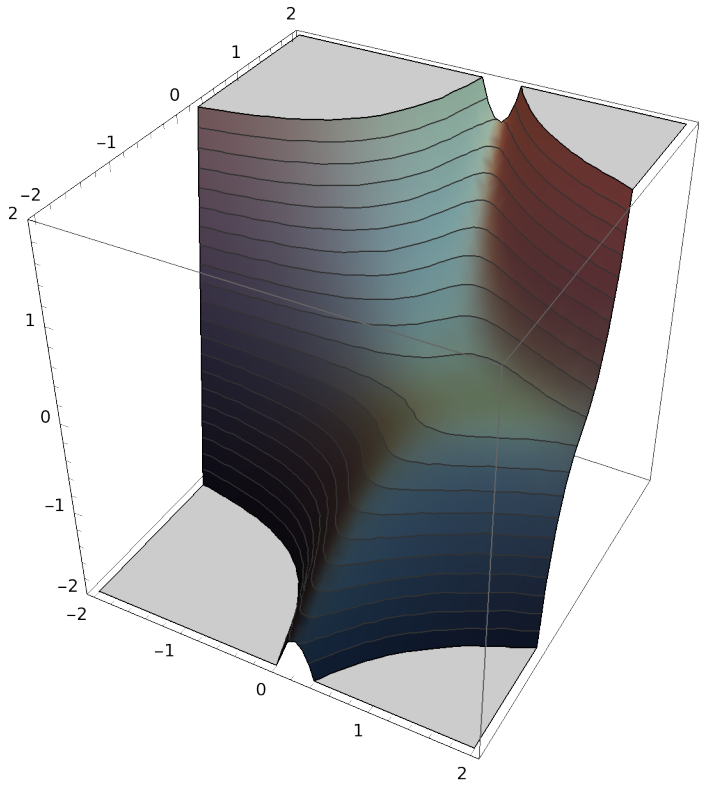
In[29]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &},
 Mesh → 20, MeshShading → Table[ColorData["StarryNightColors"][t], {t, 0, 0, 1}],
 PlotRange → 2, BoxRatios → 1]
```

Out[29]=



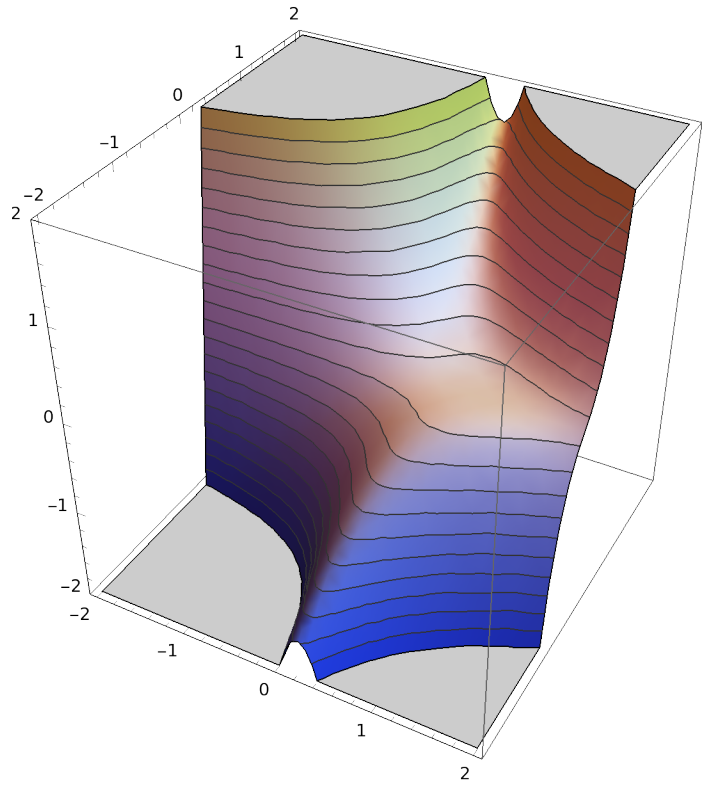
In[32]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &}, Mesh → 20,
 MeshShading → Table[ColorData["StarryNightColors"][t], {t, 0, 1, 1/30}],
 PlotRange → 2, BoxRatios → 1]
```

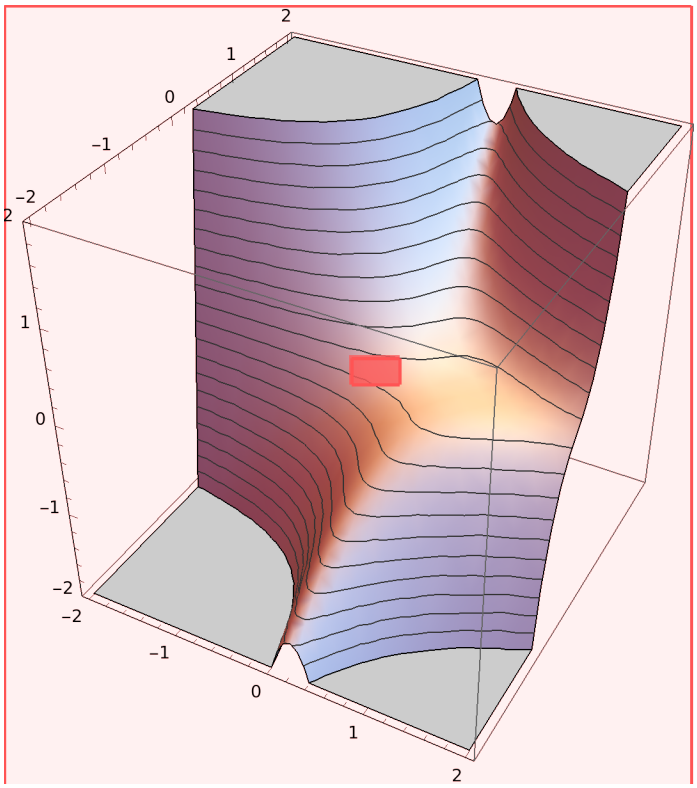
Out[32]=



In[33]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &},
 Mesh → 20, MeshShading → Table[ColorData["TemperatureMap"][t], {t, 0, 1, 1/30}],
 PlotRange → 2, BoxRatios → 1]
```

Out[33]=



In[34]:=
```
Plot3D[(x^2 y^3)+(x-1)^2 y, {x, -2, 2}, {y, -2, 2}, MeshFunctions → {#3 &},
 Mesh → 20, MeshShading → Table[ColorData["Gradients"][t], {t, 0, 1, 1/30}],
 PlotRange → 2, BoxRatios → 1]
```

Out[34]=