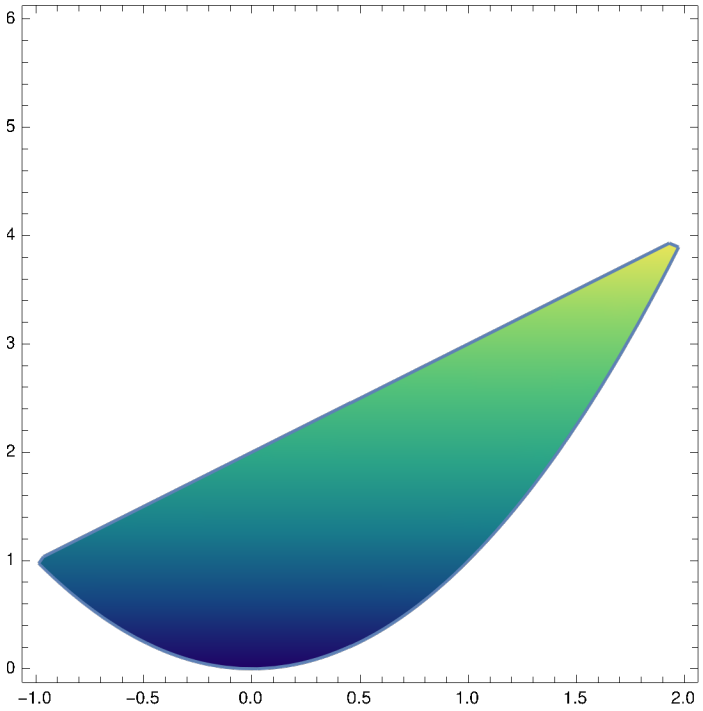
```
SetOptions[RegionPlot3D(*Or whichever plot you desire*),
  ColorFunction → "Rainbow"(*One of many options*)];
SetOptions[RegionPlot(*Or whichever plot you desire*),
  ColorFunction → "BlueGreenYellow"(*One of many options*)];
SetOptions[Plot3D(*Or whichever plot you desire*),
 ColorFunction → "Rainbow"(*One of many options*)]
```

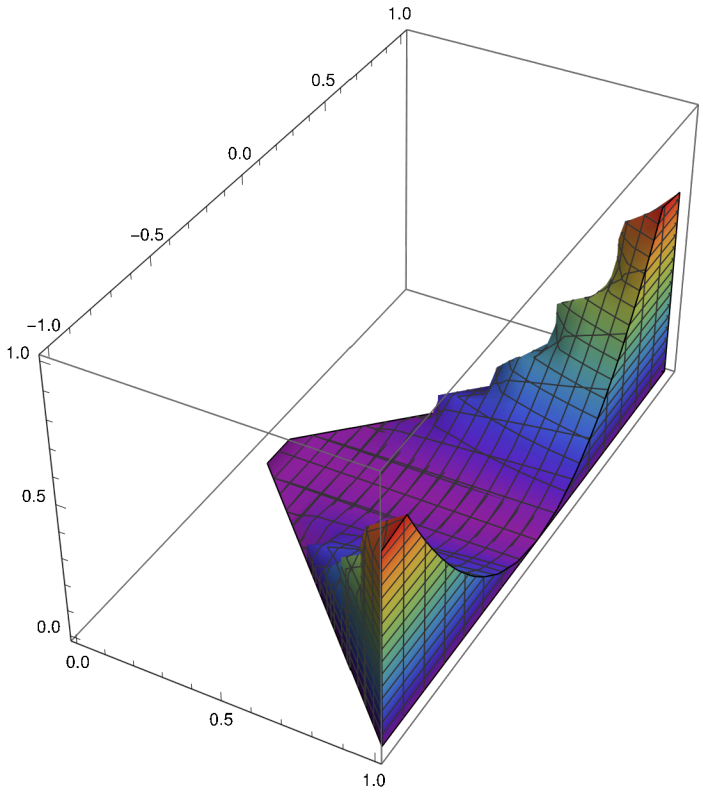
(*2*)

```
{AlignmentPoint → Center, AspectRatio → Automatic, AutomaticImageSize → False,
 Axes → True, AxesEdge → Automatic, AxesLabel → None, AxesOrigin → Automatic,
 AxesStyle → {}, Background → None, BaselinePosition → Automatic, BaseStyle → {},
 BoundaryStyle → ■, Boxed → True, BoxRatios → {1, 1, 0.4}, BoxStyle → {},
 ClippingStyle → Automatic, ClipPlanes → None, ClipPlanesStyle → Automatic,
 ColorFunction → Rainbow, ColorFunctionScaling → True, ColorOutput → Automatic,
 ContentSelectable → Automatic, ControllerLinking → Automatic,
 ControllerMethod → Automatic, ControllerPath → Automatic,
 CoordinatesToolOptions → Automatic, DisplayFunction :→ $DisplayFunction, Epilog → {},
 Evaluated → Automatic, EvaluationMonitor → None, Exclusions → Automatic,
 ExclusionsStyle → None, FaceGrids → None, FaceGridsStyle → {}, Filling → None,
 FillingStyle → Opacity[0.5], FormatType :→ TraditionalForm, ImageMargins → 0.,
 ImagePadding → All, ImageSize → Automatic, ImageSizeRaw → Automatic,
 LabelStyle → {}, Lighting → Automatic, MaxRecursion → Automatic,
 Mesh → Automatic, MeshFunctions → {#1 &, #2 &}, MeshShading → None,
 MeshStyle → Automatic, Method → Automatic, NormalsFunction → Automatic,
 PerformanceGoal :→ $PerformanceGoal, PlotLabel → None, PlotLegends → None,
 PlotPoints → Automatic, PlotRange → {Full, Full, Automatic},
 PlotRangePadding → Automatic, PlotRegion → Automatic, PlotStyle → Automatic,
 PlotTheme :→ $PlotTheme, PreserveImageOptions → Automatic, Prolog → {},
 RegionFunction → (True &), RotationAction → Fit, SphericalRegion → False,
 TargetUnits → Automatic, TextureCoordinateFunction → Automatic,
 TextureCoordinateScaling → Automatic, Ticks → Automatic, TicksStyle → {},
 TouchscreenAutoZoom → False, ViewAngle → Automatic, ViewCenter → Automatic,
 ViewMatrix → Automatic, ViewPoint → {1.3, -2.4, 2.}, ViewRange → All,
 ViewVector → Automatic, ViewVertical → {0, 0, 1}, WorkingPrecision → MachinePrecision}
```

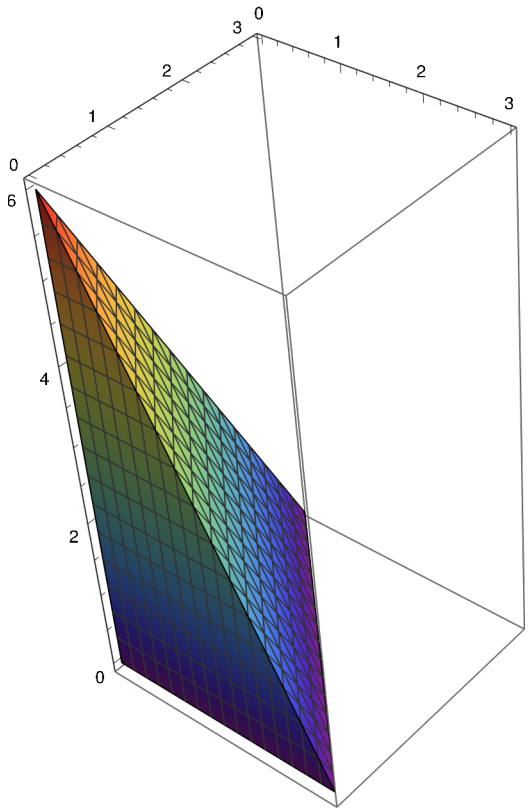
```
RegionPlot[x^2 < y < x + 2, {x, -1, 2}, {y, 0, 6}]
```



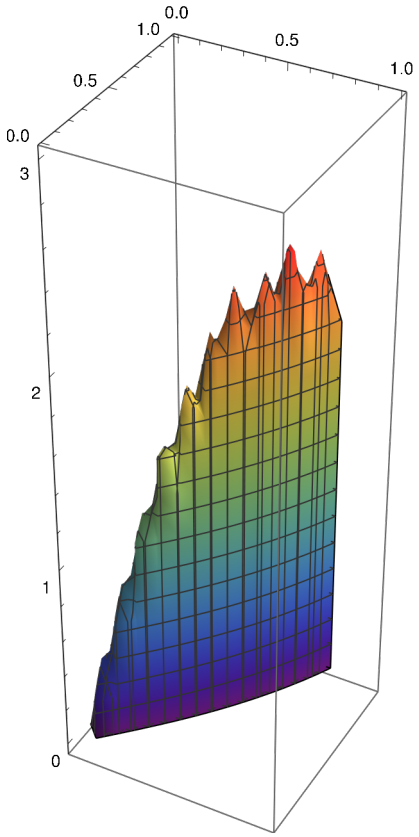

```
RegionPlot3D[z < x * y^2 && x > Abs[y],
 {x, 0, 1}, {y, -1, 1}, {z, 0, 1}, BoxRatios → Automatic]
```



```
RegionPlot3D[2 x + 2 y + z < 6, {x, 0, 3}, {y, 0, 3}, {z, 0, 6}, BoxRatios → Automatic]
```

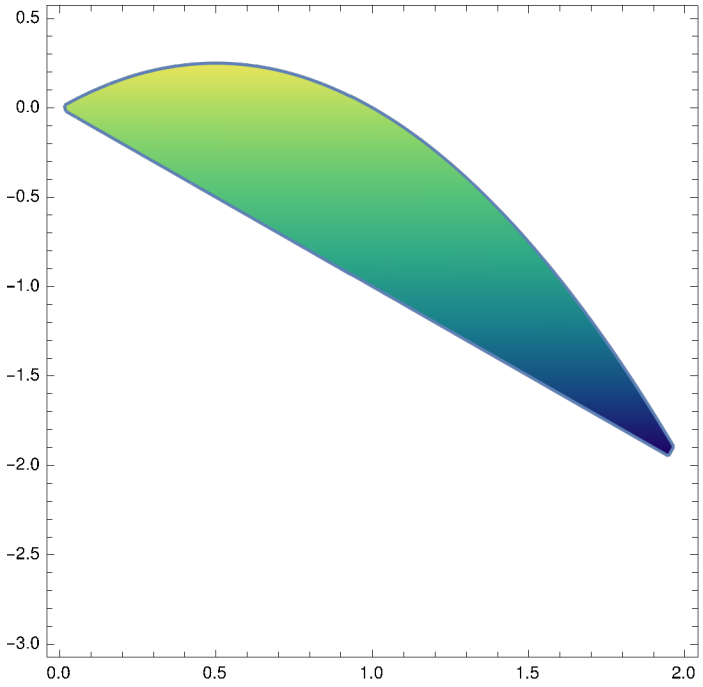


```
RegionPlot3D[x < ArcTan[y] && z < 6 x / (1 + y ^ 2),
 {x, 0, 1}, {y, 0, 1}, {z, 0, 3}, BoxRatios → Automatic]
```

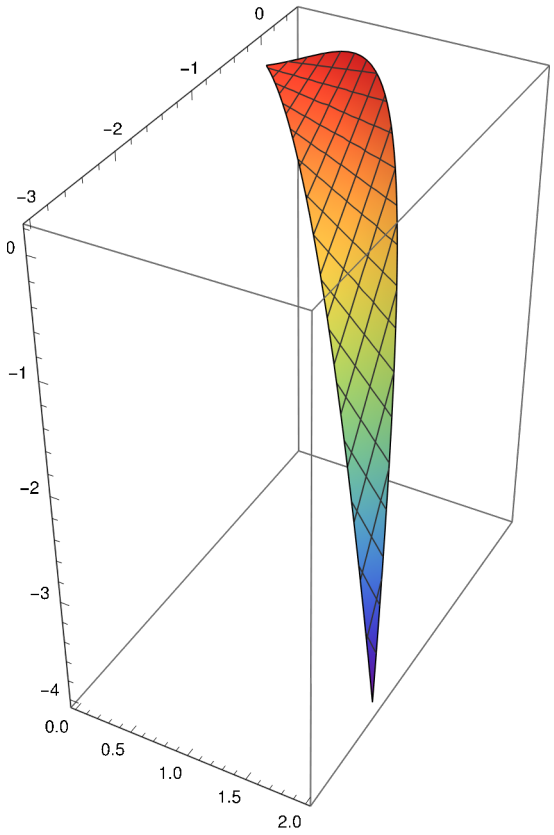



```
(*3a*)
```

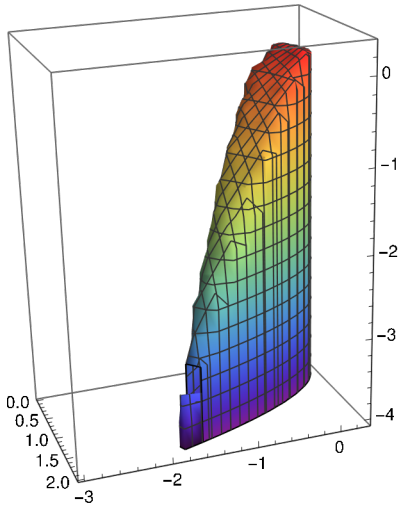
```
RegionPlot[y > -x && y < x - x^2, {x, 0, 2}, {y, -3, 0.5}]
```



```
Plot3D[{x * y}, {x, 0, 2}, {y, -3, 0.5},
 RegionFunction → Function[{x, y, z}, y > -x && y < x - x^2], BoxRatios → Automatic]
```

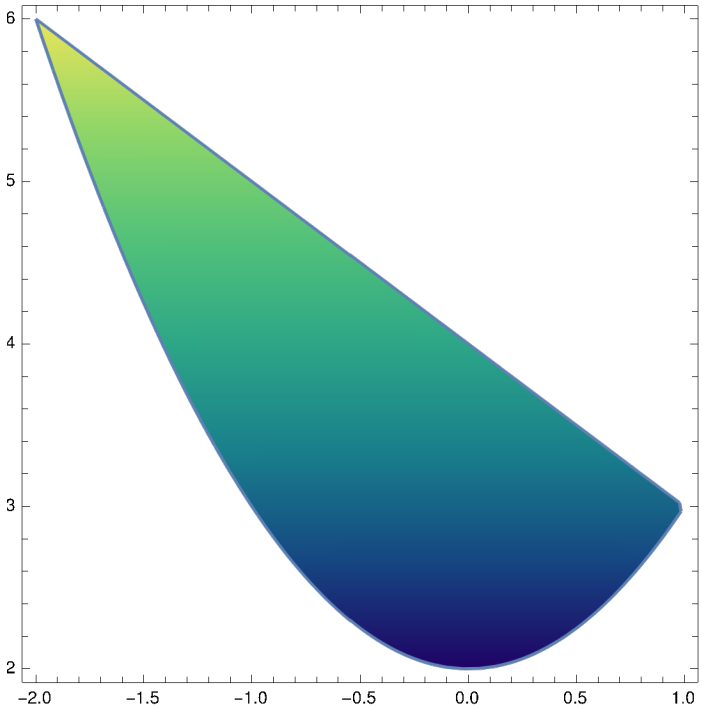


```
RegionPlot3D[y > -x && y < x - x^2 && z < x * y,
 {x, 0, 2}, {y, -3, 0.3}, {z, -4, 0.3}, BoxRatios → Automatic]
```

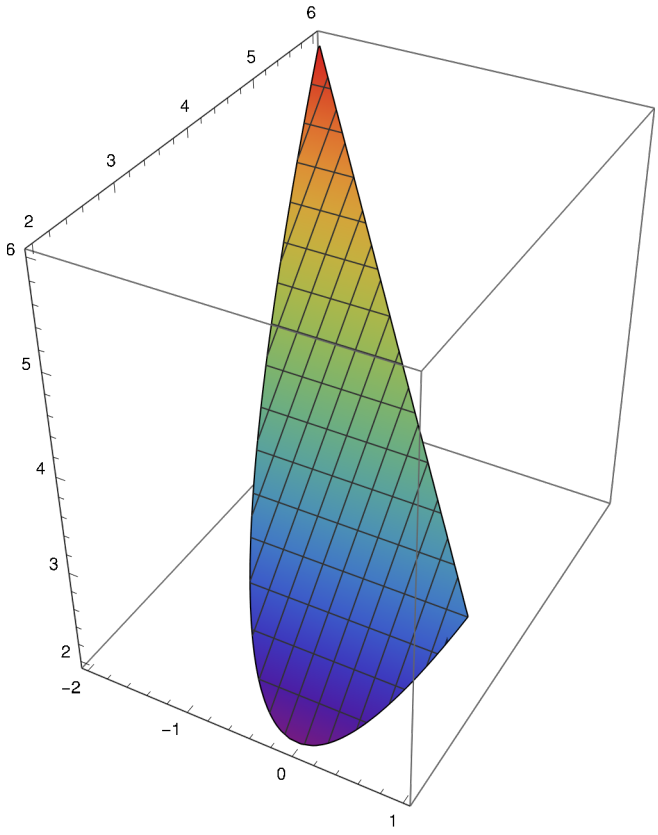



```
(*3b*)
```

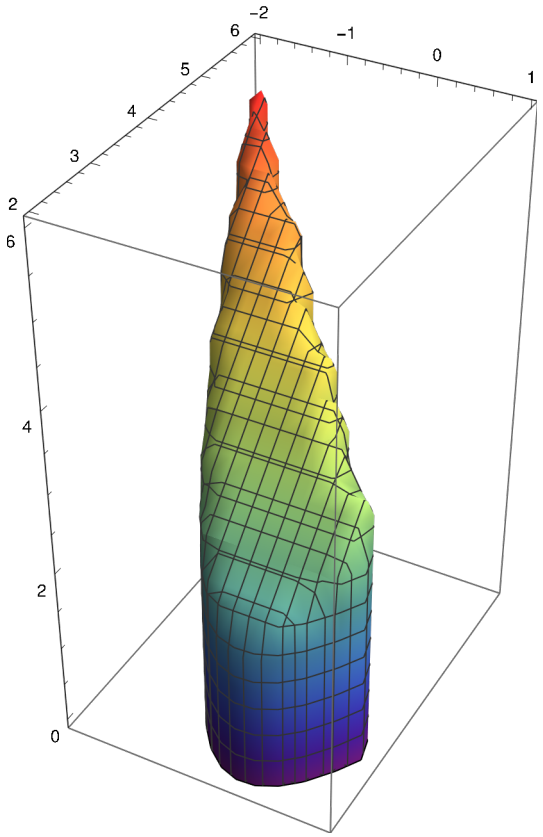
```
RegionPlot[y > x^2 + 2 && y < 4 - x, {x, -2, 1}, {y, 2, 6}]
```



```
Plot3D[{y}, {x, -2, 1}, {y, 2, 6},
 RegionFunction → Function[{x, y, z}, y > x^2 + 2 && y < 4 - x], BoxRatios → Automatic]
```

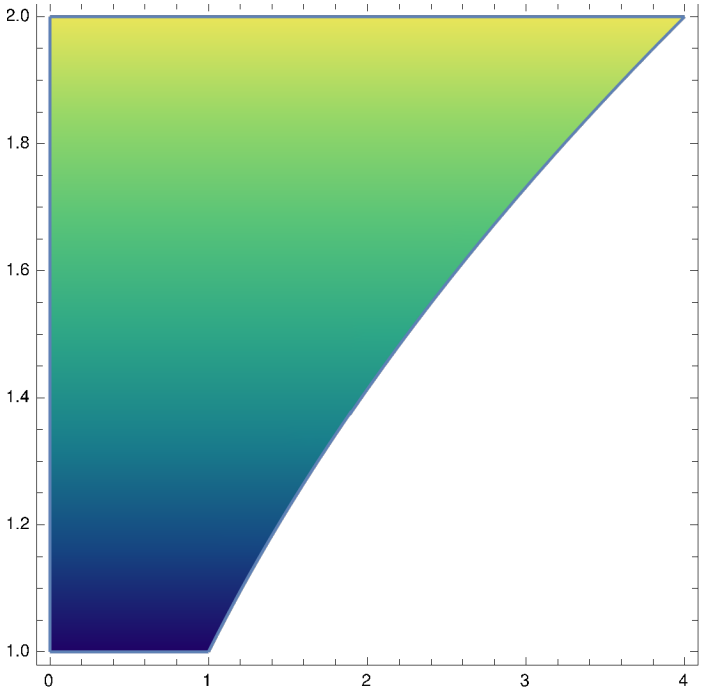


```
RegionPlot3D[y > x^2 + 2 && y < 4 - x && z < y,
 {x, -2, 1}, {y, 2, 6}, {z, 0, 6}, BoxRatios → Automatic]
```

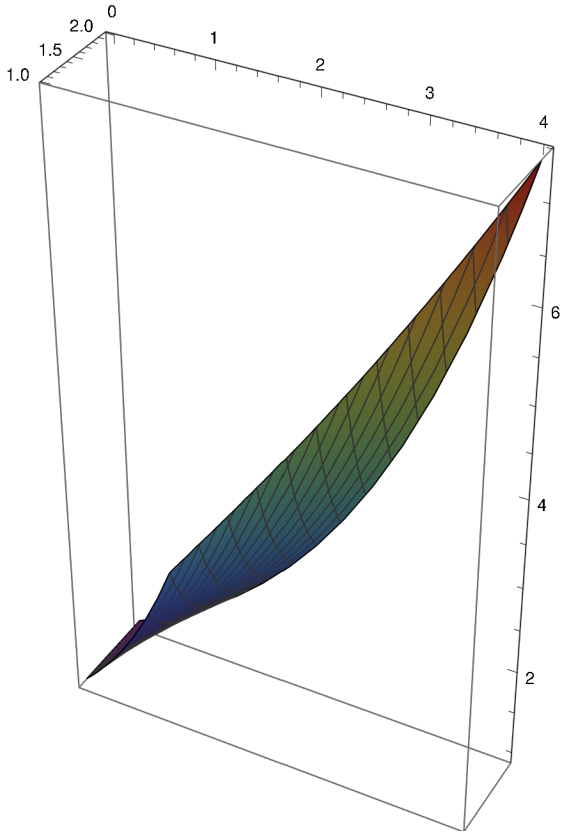



```
(*3c*)
```

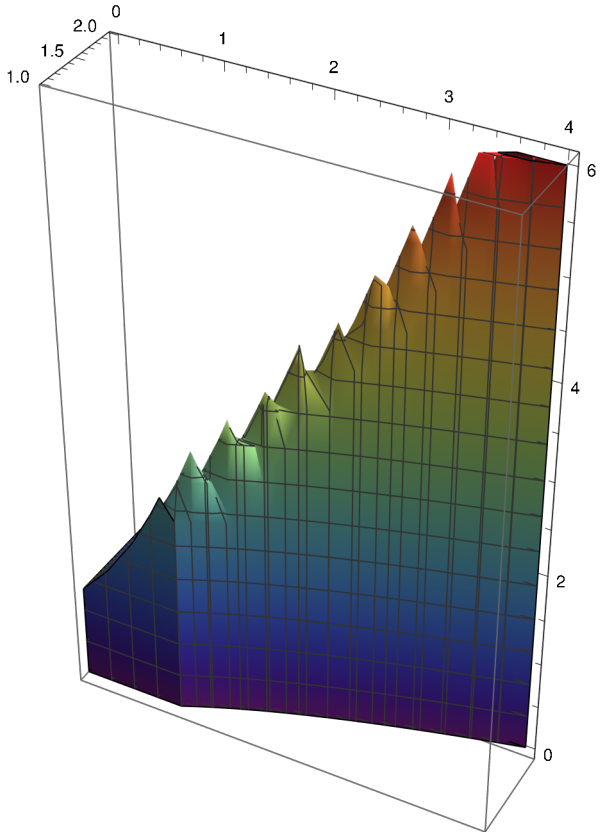
```
RegionPlot[y^2 - x > 0, {x, 0, 4}, {y, 1, 2}]
```



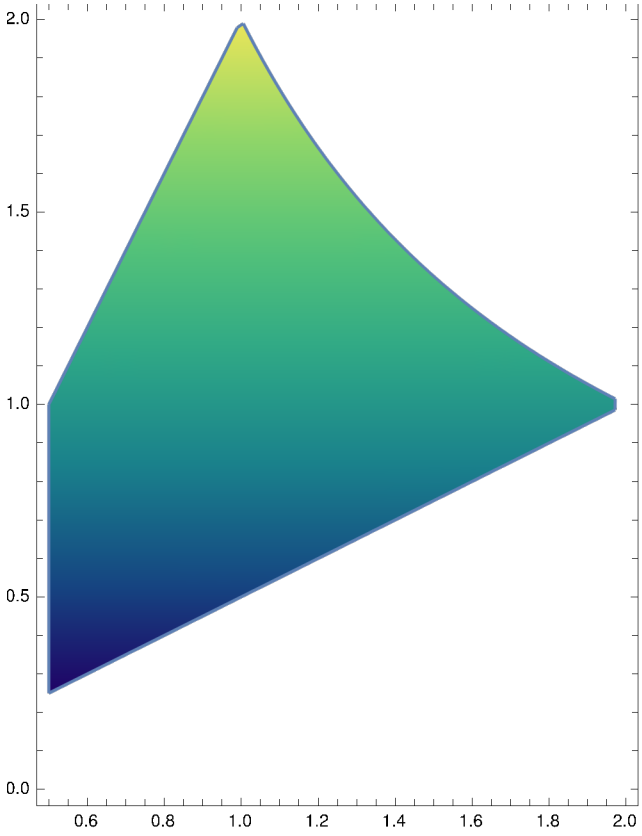

```
Plot3D[{Exp[x / y]}, {x, 0, 4}, {y, 1, 2},
 RegionFunction → Function[{x, y, z}, y^2 - x > 0], BoxRatios → Automatic]
```



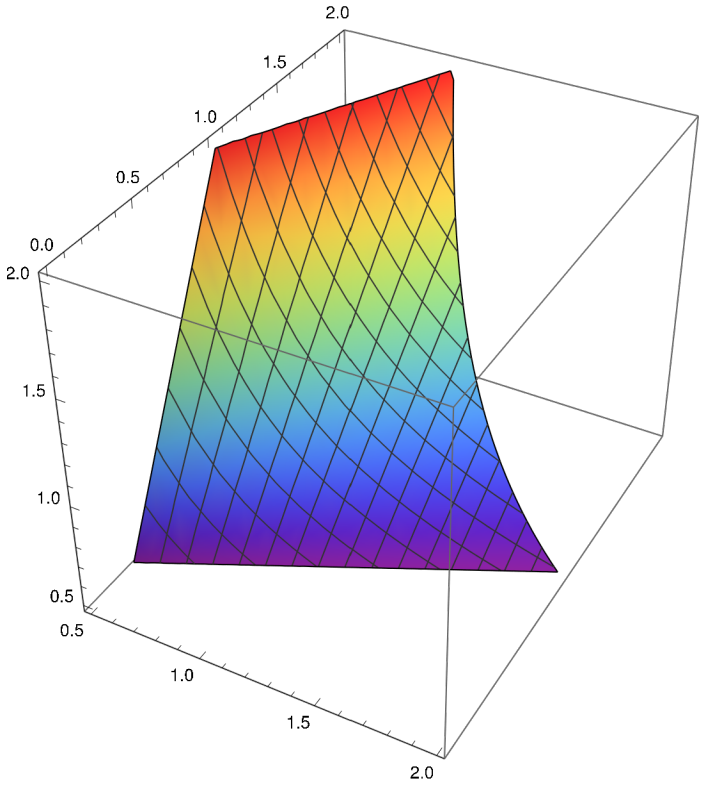
```
RegionPlot3D[y^2 - x > 0 && z < Exp[x / y],
 {x, 0, 4}, {y, 1, 2}, {z, 0, 6}, BoxRatios → Automatic]
```



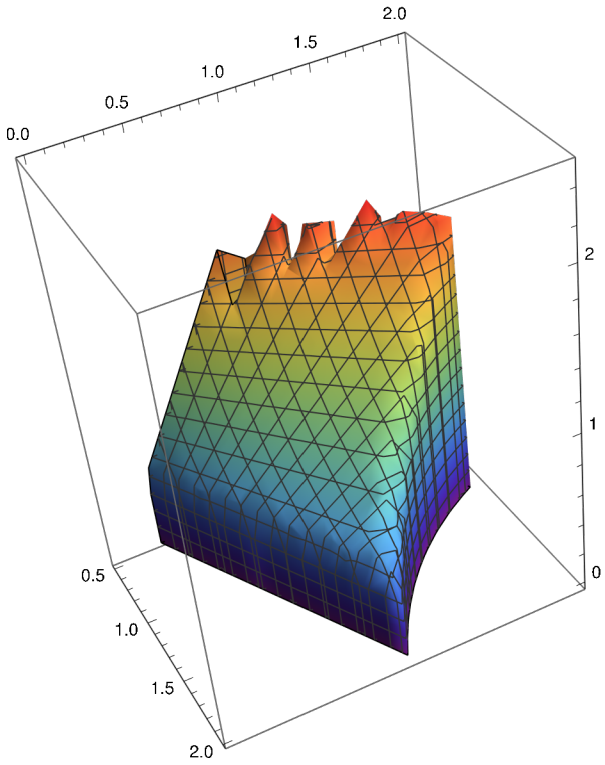
```
(*3d*)
RegionPlot[y > x / 2 && y < 2 x && y < 2 / x, {x, 1 / 2, 2}, {y, 0, 2}, AspectRatio → Automatic]
```



```
Plot3D[{y / x}, {x, 1 / 2, 2}, {y, 0, 2},
 RegionFunction → Function[{x, y, z}, y > x / 2 && y < 2 x && y < 2 / x], BoxRatios → Automatic]
```

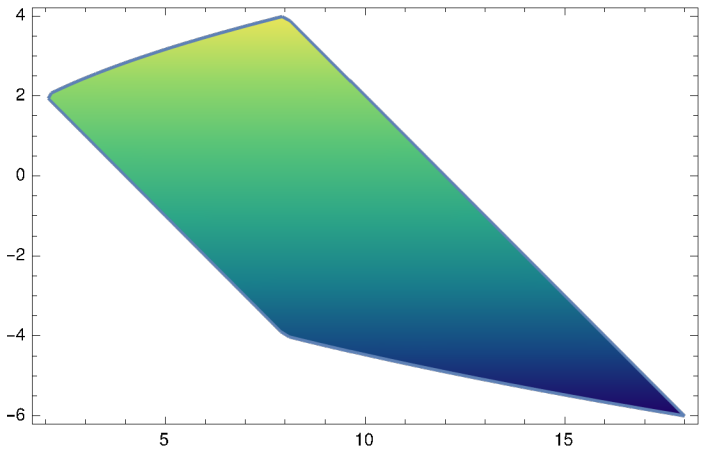


```
RegionPlot3D[y > x / 2 && y < 2 x && y < 2 / x && z < y / x,
 {x, 1 / 2, 2}, {y, 0, 2}, {z, 0, 2.5}, BoxRatios → Automatic]
```

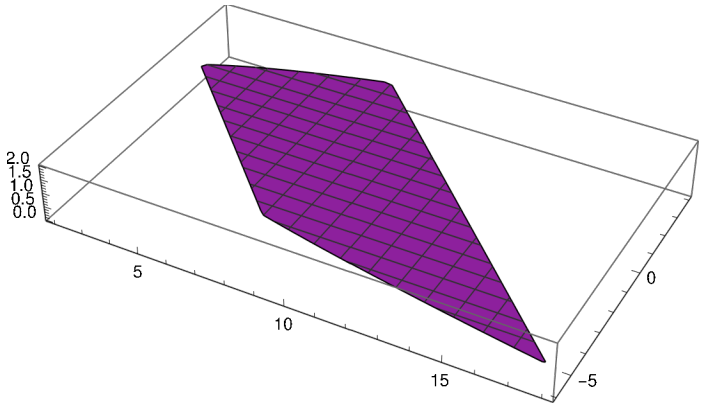



```
(*3e*)
```

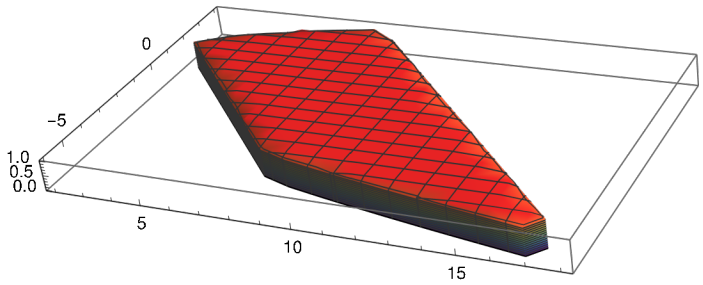
```
RegionPlot[y * y < 2 x && x + y < 12 && x + y > 4,
 {x, 2, 18}, {y, -6, 4}, AspectRatio → Automatic]
```



```
Plot3D[{1}, {x, 2, 18}, {y, -6, 4}, RegionFunction →
  Function[{x, y, z}, y * y < 2 x && x + y < 12 && x + y > 4], BoxRatios → Automatic]
```

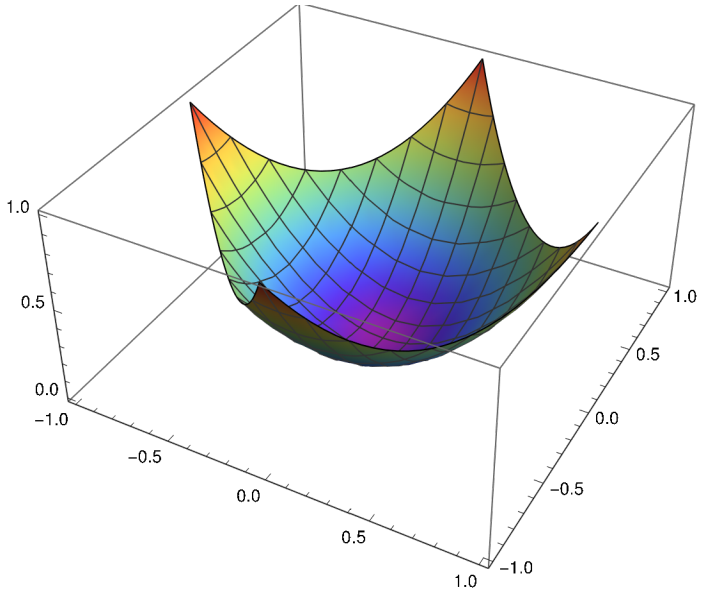


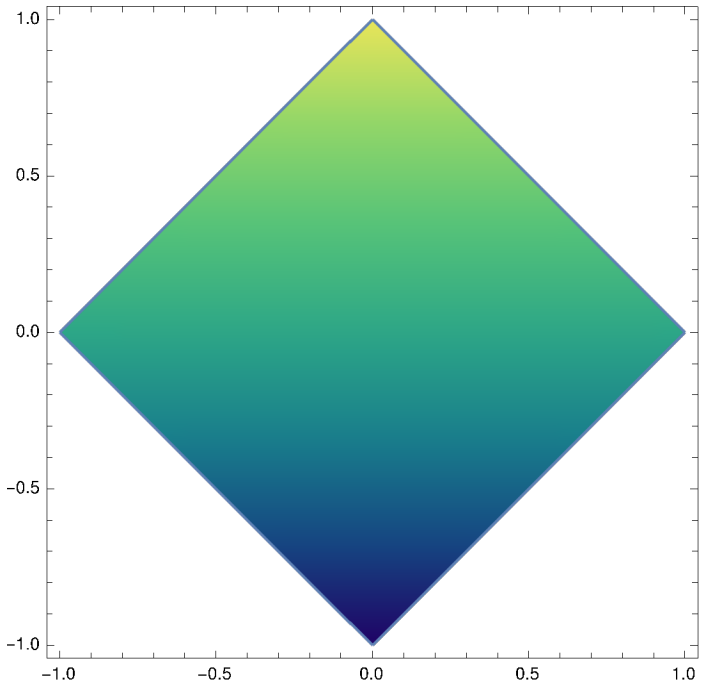

```
RegionPlot3D[y * y < 2 x && x + y < 12 && x + y > 4 && z < 1,
 {x, 2, 18}, {y, -6, 4}, {z, 0, 1}, BoxRatios → Automatic]
```



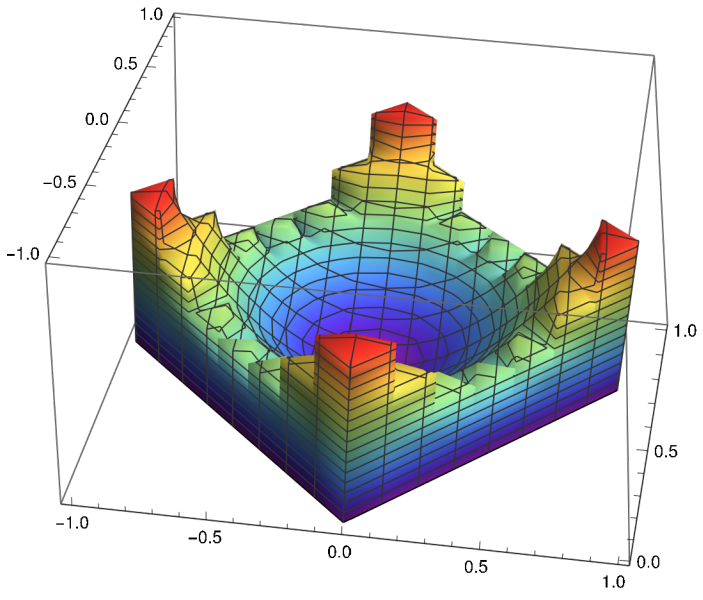

```
(*3f*)
```

```
Plot3D[{x^2 + y^2}, {x, -1, 1}, {y, -1, 1},
 RegionFunction → Function[{x, y, z}, Abs[x] + Abs[y] < 1], BoxRatios → Automatic]
RegionPlot[Abs[x] + Abs[y] < 1, {x, -1, 1}, {y, -1, 1}]
```



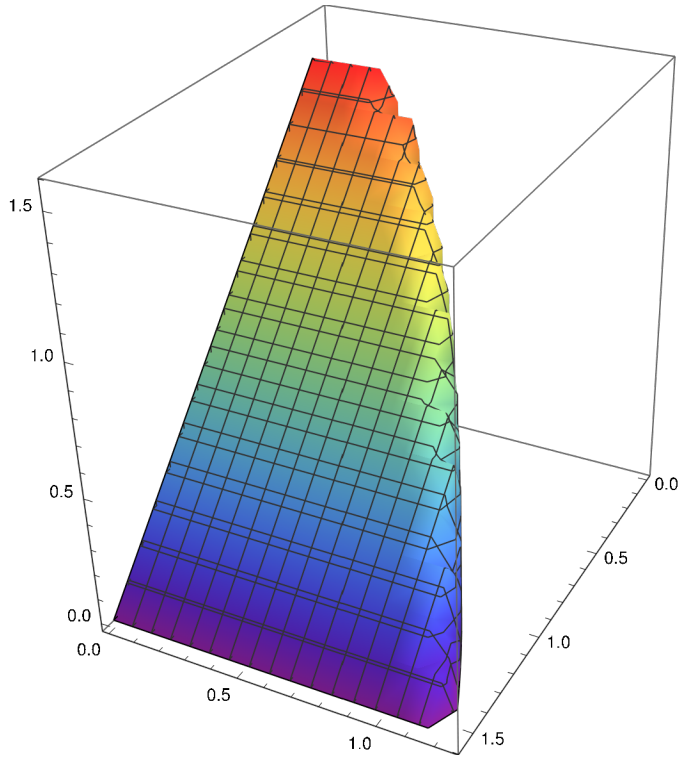


```
RegionPlot3D[Abs[x] + Abs[y] < 1 && z < x^2 + y^2,
 {x, -1, 1}, {y, -1, 1}, {z, 0, 1}, BoxRatios → Automatic]
```

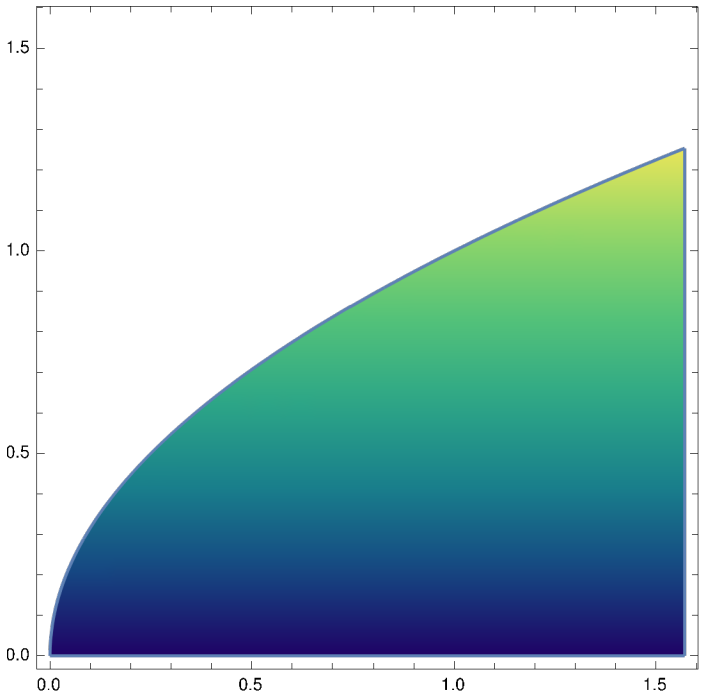



```
(*3g*)
```

```
RegionPlot3D[x + z < Pi / 2 && y < Sqrt[x], {x, 0, Pi / 2},
 {y, 0, Sqrt[Pi / 2]}, {z, 0, Pi / 2}, BoxRatios → Automatic]
```

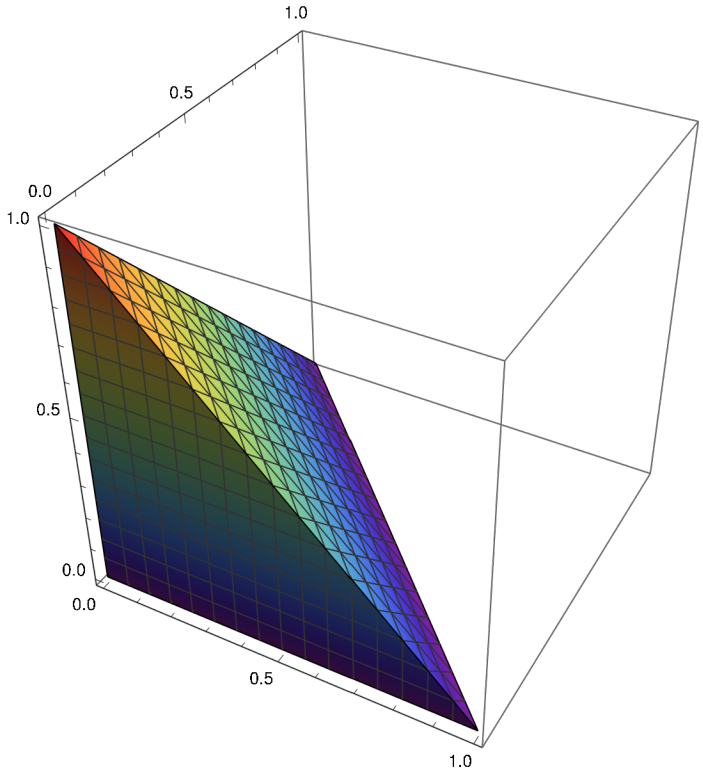



```
RegionPlot[0 < y < Sqrt[x], {x, 0, Pi / 2}, {y, 0, Pi / 2}]
```



w

```
RegionPlot3D[x + z + y < 1, {x, 0, 1}, {y, 0, 1}, {z, 0, 1}, BoxRatios → Automatic]
```




```
RegionPlot[0 < y < 1 - x, {x, 0, 1}, {y, 0, 1}]
```