

三维公式区域

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In[*]:= region["Parametric Curve"] = ParametricRegion[{Cos[t], Sin[t], t / 16}, {{t, 0, 10 π}}];
                                         |参数区域      |余弦      |正弦

In[*]:= region["Implicit Curve"] =
      ImplicitRegion[5 y - 20 y^3 + 16 y^5 - z == 0 && x^2 + y^2 == 1, {x, y, z}];
      |隐式区域

In[*]:= region["Sphere"] = ImplicitRegion[x^2 + y^2 + z^2 == 1, {x, y, z}];
      |球体      |隐式区域

In[*]:= region["Saddle"] = ParametricRegion[{u, v, u^2 - v^2}, {{u, -1, 1}, {v, -1, 1}}];
      |参数区域

In[*]:= region["Torus"] = ParametricRegion[
      |圆环面      |参数区域
      {Cos[u] (2 + Sin[v]), Sin[u] (2 + Sin[v]), Cos[v]}, {{u, 0, 2 π}, {v, 0, 2 π}}];
      |余弦      |正弦      |正弦      |正弦      |余弦

In[*]:= region["Astroidal Ellipsoid"] = ImplicitRegion[(x^2)^(1 / 3) / 3^(2 / 3) +
      |椭球      |隐式区域
      (y^2)^(1 / 3) / 2^(2 / 3) + (z^2)^(1 / 3) / 3^(2 / 3) == 1, {x, y, z}];

In[*]:= region["Cylindrical Shell"] = ImplicitRegion[4 ≤ x^2 + y^2 ≤ 9 && -3 ≤ z ≤ 3, {x, y, z}];
      |隐式区域

In[*]:= region["Steinmetz 3-solid"] =
      ImplicitRegion[x^2 + z^2 < 9 && x^2 + y^2 < 9 && y^2 + z^2 < 9, {x, y, z}];
      |隐式区域

In[*]:= region["Eight Solid"] = ImplicitRegion[4 z^4 + 9 (x^2 + y^2 - 4 z^2) ≤ 1, {x, y, z}];
      |隐式区域

In[*]:= names = {"Parametric Curve", "Implicit Curve", "Sphere", "Saddle", "Torus",
      |球体      |圆环面
      "Astroidal Ellipsoid", "Cylindrical Shell", "Steinmetz 3-solid", "Eight Solid"};
      |椭球

In[*]:= FrameExample[expr_, label_] := Framed[
      |加边框
      Grid[List /@ {label, Show[expr, Boxed → False, Axes → False, ImageSize → {100, 100}]},
      |格子 |列表      |显示      |边界框 |假      |坐标轴 |假      |图像尺寸
      ItemSize → {12, Automatic}, BaseStyle → {Gray, FontFamily → "Helvetica"},
      |项的尺寸      |自动      |基本样式      |灰色 |字体系列
      Alignment → Top], FrameStyle → Directive[Thickness[4], Gray], RoundingRadius → 5];
      |对齐      |顶部 |边框样式      |指令      |粗细      |灰色 |圆角的圆半径
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In[ ]:= plots = {ParametricPlot3D[Evaluate[region["Parametric Curve"]][1]], {t, 0, 10 Pi},
    [绘制三维参数图] [计算] [圆周率]
    Ticks → None], DiscretizeRegion[Evaluate@region["Implicit Curve"]],
    [刻度] [无] [离散化区域] [计算]
    ContourPlot3D[Evaluate[region["Sphere"]][1]], {x, -1.1, 1.1},
    [三维等高线] [计算] [球体]
    {y, -1.1, 1.1}, {z, -1.1, 1.1}, Mesh → None, Ticks → None],
    [网格] [无] [刻度] [无]
    ParametricPlot3D[Evaluate[region["Saddle"]][1]], {u, -1, 1}, {v, -1, 1},
    [绘制三维参数图] [计算]
    Mesh → None, Ticks → None], ParametricPlot3D[Evaluate[region["Torus"]][1]],
    [网格] [无] [刻度] [无] [绘制三维参数图] [计算] [圆环面]
    {u, 0, 2 Pi}, {v, 0, 2 Pi}, Mesh → None, Ticks → None, PlotRange → {-3, 3}],
    [圆周率] [...] [网格] [无] [刻度] [无] [绘制范围]
    ContourPlot3D[Evaluate[region["Astroidal Ellipsoid"]][1]], {x, -2.5, 2.5},
    [三维等高线] [计算] [椭球]
    {y, -2.5, 2.5}, {z, -2.5, 2.5}, Mesh → None, Ticks → None],
    [网格] [无] [刻度] [无]
    RegionPlot3D[Evaluate@region["Cylindrical Shell"], PlotPoints → 50],
    [三维区域图] [计算] [绘图点]
    RegionPlot3D[Evaluate@region["Steinmetz 3-solid"], PlotPoints → 100],
    [三维区域图] [计算] [绘图点]
    RegionPlot3D[Evaluate@region["Eight Solid"],
    [三维区域图] [计算]
    PlotRange → {{-3, 3}, {-3, 3}, {-3, 3}}, PlotPoints → 100]];
    [绘制范围] [绘图点]

In[ ]:= Grid[Partition[MapThread[FrameExample, {plots, names}], 3]]
    [格子] [划分] [映射线程]

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Out[]:=

