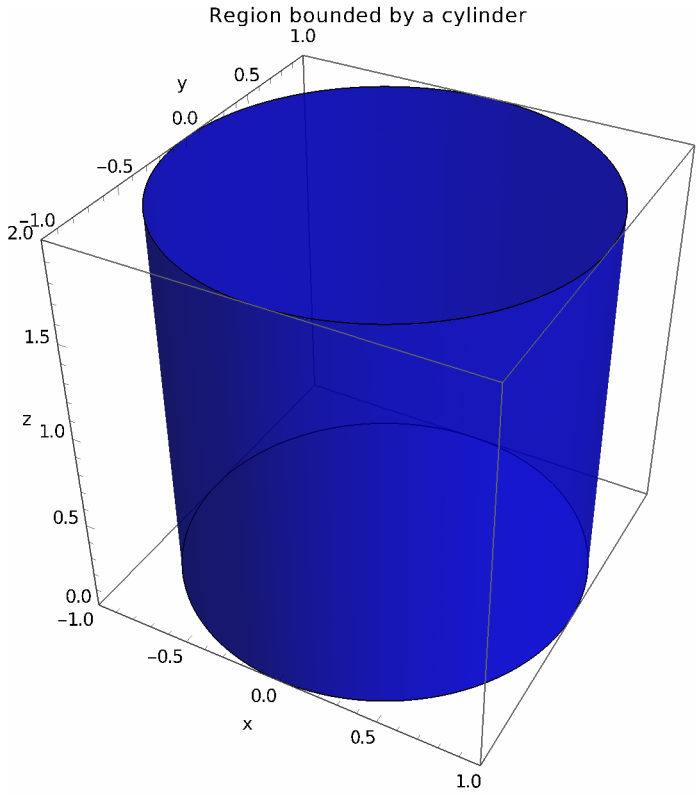
In[25]:=
```
F[x_, y_, z_] := x^2 + y^2 + z
```

```
integral = Integrate[
  F[x, y, z],
  {x, -1, 1},
  {y, -Sqrt[1 - x^2], Sqrt[1 - x^2]},
  {z, 0, 2}
]
RegionPlot3D[
  x^2 + y^2 ≤ 1,
  {x, -1, 1}, {y, -1, 1}, {z, 0, 2},
  PlotPoints → 100,
  AxesLabel → {"x", "y", "z"},
  PlotRange → {{-1, 1}, {-1, 1}, {0, 2}},
  Boxed → True,
  Mesh → None,
  PlotStyle → Opacity[0.7, Blue],
  PlotLabel → "Region bounded by a cylinder"
]
```

Out[29]=

3π

Out[30]=


Region bounded by a cylinder
y
1.0
0.5
0.0
−0.5
−1.0
2.0
1.5
z
1.0
0.5
0.0
−1.0
−0.5
0.0
x
0.5
1.0