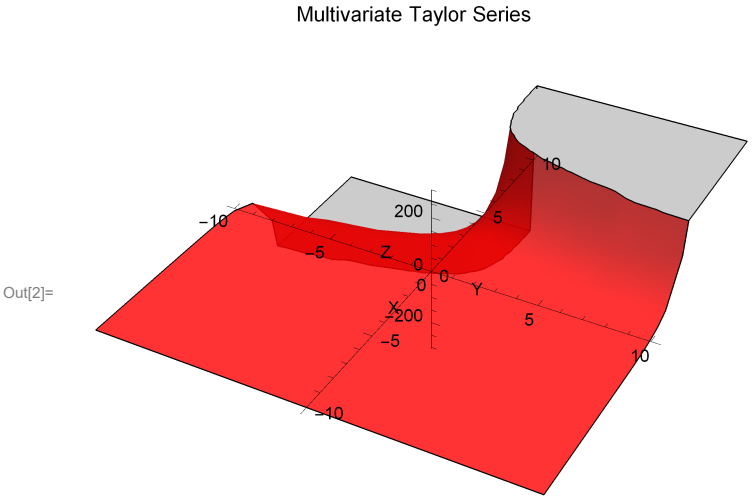
Taylor Series: Multivariate Approximation

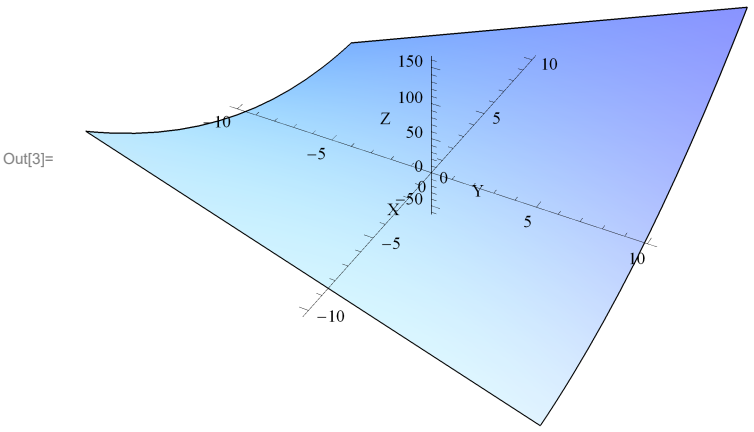
In[2]:=
```
original = Plot3D[x ℯ^y + 1, {x, -10, 10}, {y, -10, 10},
  PlotLabel → "Multivariate Taylor Series", Boxed → False, AxesOrigin → {0, 0, 0},
  AxesLabel → {"X", "Y", "Z"}, Mesh → None, PlotStyle → {Opacity[0.8], Red}]
```

Out[2]=



In[3]:=
```
approximate = Plot3D[1 + x + x y + (y^2 / 2), {x, -10, 10},
  {y, -10, 10}, PlotLabel → "Multivariate Taylor Series",
  PlotTheme → "Classic", Boxed → False, AxesOrigin → {0, 0, 0},
  AxesLabel → {"X", "Y", "Z"}, Mesh → None, PlotStyle → {Opacity[0.8]}]
```

Out[3]=



In[5]:=
```
Show[Plot3D[1 + x + x y + (y^2 / 2), {x, -10, 10}, {y, -10, 10}, PlotLabel →
    StyleForm["Multivariate Taylor Expansion", Bold, 20, FontFamily → "Helvetica"],
  PlotTheme → "Classic", Boxed → True, AxesOrigin → {0, 0, 0},
  AxesLabel → {"X", "Y", "Z"}, Mesh → None, PlotStyle → {Opacity[0.8]}],
 Plot3D[x ℯ^y + 1, {x, -10, 10}, {y, -10, 10},
  Mesh → None, PlotStyle → {Opacity[0.8], Red}],
 Plot3D[1 + x + y, {x, -10, 10}, {y, -10, 10}, PlotTheme → "Automatic",
  AxesOrigin → {0, 0, 0}, Mesh → None, PlotStyle → {Opacity[0.8]}]]
```

Out[5]=