```
J0 = {{-sigma, sigma, 0}, {r - z, -1, -x}, {y, x, -b}};
{{-sigma, sigma, 0}, {r - z, -1, -x}, {y, x, -b}};
J = J0 /. {sigma → 10, b → 8 / 3, r → 28};
eigens = Eigenvalues[J];

eigens1 = eigens /. {x → 0, y → 0, z → 0};
AnyTrue[{Re[Evaluate[eigens1[[1]]]],
  Re[Evaluate[eigens1[[2]]]], Re[Evaluate[eigens1[[3]]]]}, LessThan[0]]

eigens2 = eigens /. {x → -sqrt (6) / 2, y → -sqrt (6) / 2, z → 27};
AnyTrue[{Re[Evaluate[eigens1[[1]]]],
  Re[Evaluate[eigens1[[2]]]], Re[Evaluate[eigens1[[3]]]]}, LessThan[0]]

eigens2 = eigens /. {x → sqrt (6) / 2, y → sqrt (6) / 2, z → 27};
AnyTrue[{Re[Evaluate[eigens1[[1]]]],
  Re[Evaluate[eigens1[[2]]]], Re[Evaluate[eigens1[[3]]]]}, LessThan[0]]

Tr[J0]
```

Out[•]= True

Out[•]= True

Out[•]= True

Out[•]= $-1 - b - \text{sigma}$

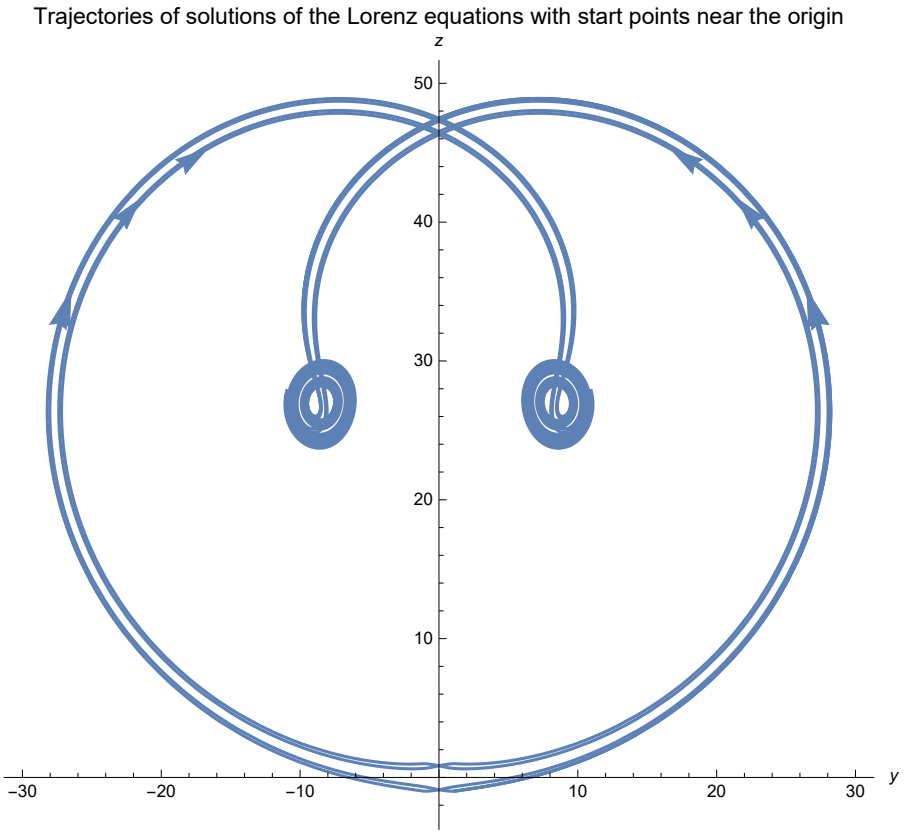
In[638]:=
```
ClearAll["Global`*"]
sigma0 = 10;
b0 = 8/3;
r0 = 28;
tMax = 4;

sol[u_, v_, w_] := NDSolve[{x'[t] == sigma0 * (y[t] - x[t]),
    y'[t] == r0 * x[t] - y[t] - x[t] * z[t],
    z'[t] == x[t] * y[t] - b0 * z[t],
    x[0] == u,
    y[0] == v,
    z[0] == w},
   {x, y, z},
   {t, 0, tMax}];

TableFinal = {{-1, -1, -1}, {-1, -1, 1}, {-1, 1, 1}, {-1, 1, -1},
   {1, 1, -1}, {1, -1, -1}, {1, -1, 1}, {1, 1, 1}, {1, 1, -1}, {1, 1, -1}};

title = "Trajectories of solutions of
    the Lorenz equations with start points near the origin";
Show[Table[ParametricPlot[Evaluate[{y[t], z[t]} /.
      sol[TableFinal[[i, 1]], TableFinal[[i, 2]], TableFinal[[i, 3]]]], {t, 0, tMax},
    PlotRange → All, AxesLabel → {y, z}, PlotLabel → Style[title, FontSize → 12]] /.
   Line[x_] :→ {Arrowheads[{0, 0.03, 0, 0}], Arrow[x]}, {i, Length[TableFinal]}]]
```

Out[646]=



In[420]:= **TableFinal**

Out[420]= {{−1, −1.}, {−1, −0.9}, {−1, −0.8}, {−1, −0.7}, {−1, −0.6}, {−1, −0.5},
{−1, −0.4}, {−1, −0.3}, {−1, −0.2}, {−1, −0.1}, {−1, 0.}, {−1, 0.1}, {−1, 0.2},
{−1, 0.3}, {−1, 0.4}, {−1, 0.5}, {−1, 0.6}, {−1, 0.7}, {−1, 0.8}, {−1, 0.9},
{−1, 1.}, {−1., 1}, {−0.9, 1}, {−0.8, 1}, {−0.7, 1}, {−0.6, 1}, {−0.5, 1},
{−0.4, 1}, {−0.3, 1}, {−0.2, 1}, {−0.1, 1}, {0., 1}, {0.1, 1}, {0.2, 1},
{0.3, 1}, {0.4, 1}, {0.5, 1}, {0.6, 1}, {0.7, 1}, {0.8, 1}, {0.9, 1}, {1., 1},
{1, −1.}, {1, −0.9}, {1, −0.8}, {1, −0.7}, {1, −0.6}, {1, −0.5}, {1, −0.4},
{1, −0.3}, {1, −0.2}, {1, −0.1}, {1, 0.}, {1, 0.1}, {1, 0.2}, {1, 0.3},
{1, 0.4}, {1, 0.5}, {1, 0.6}, {1, 0.7}, {1, 0.8}, {1, 0.9}, {1, 1.}, {−1., −1},
{−0.9, −1}, {−0.8, −1}, {−0.7, −1}, {−0.6, −1}, {−0.5, −1}, {−0.4, −1},
{−0.3, −1}, {−0.2, −1}, {−0.1, −1}, {0., −1}, {0.1, −1}, {0.2, −1}, {0.3, −1},
{0.4, −1}, {0.5, −1}, {0.6, −1}, {0.7, −1}, {0.8, −1}, {0.9, −1}, {1., −1}}