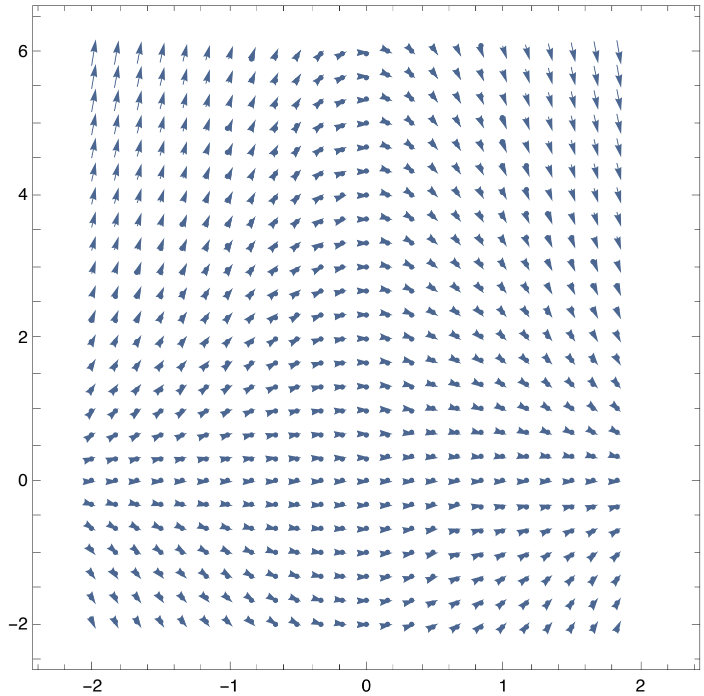
In[∘]:= `f[x_, y_] := -x y`

In[∘]:= `g1 = VectorPlot[{1, f[x, y]}, {x, -2, 2}, {y, -2, 6}, VectorStyle → Arrowheads[0.02], VectorPoints → Fine]`

Out[∘]=

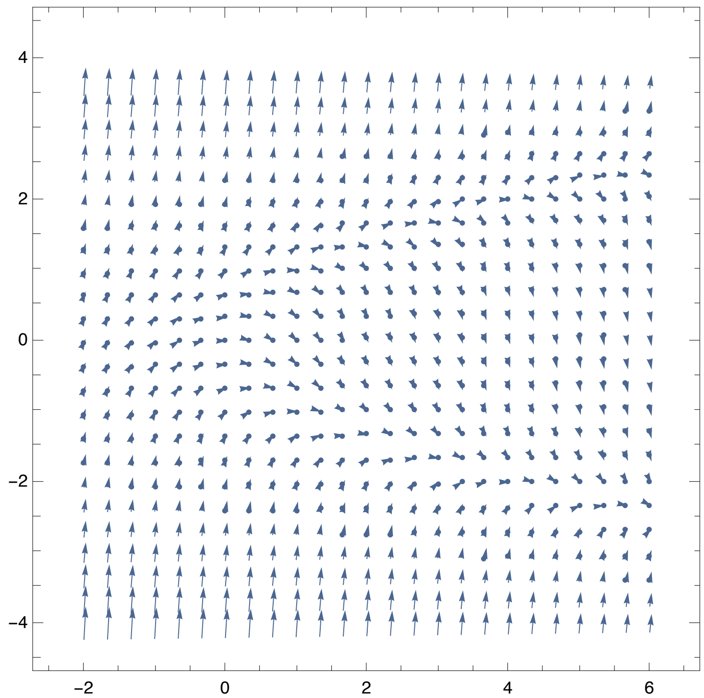



```
(* non-linear de's? *)
```

In[∘]:= `g[x_, y_] := y^2 - x`

In[∘]:=
```
g2 = VectorPlot[{1, g[x, y]}, {x, -2, 6}, {y, -4, 4},
  VectorStyle → Arrowheads[0.017], VectorPoints → Fine]
```

Out[∘]=



In[∘]:=
```
sol = NDSolve[{y'[x] == y[x]^2 - x, y[0] == 0}, y, {x, -2, 5}]
```

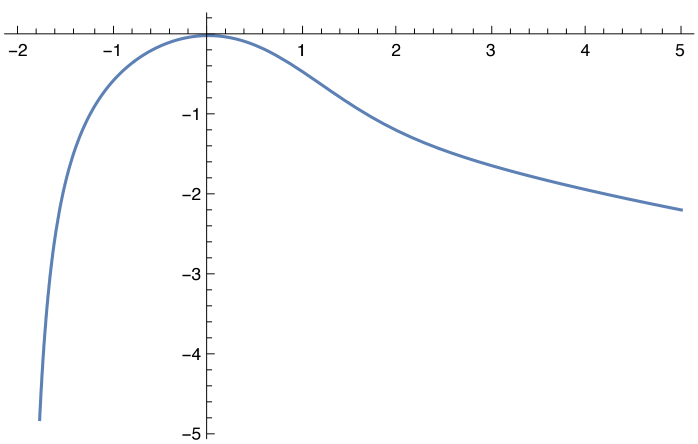
NDSolve: At x == -1.98635, step size is effectively zero; singularity or stiff system suspected.

Out[∘]= {{y → InterpolatingFunction[Domain: {{-1.99, 5.}} Output: scalar]}}

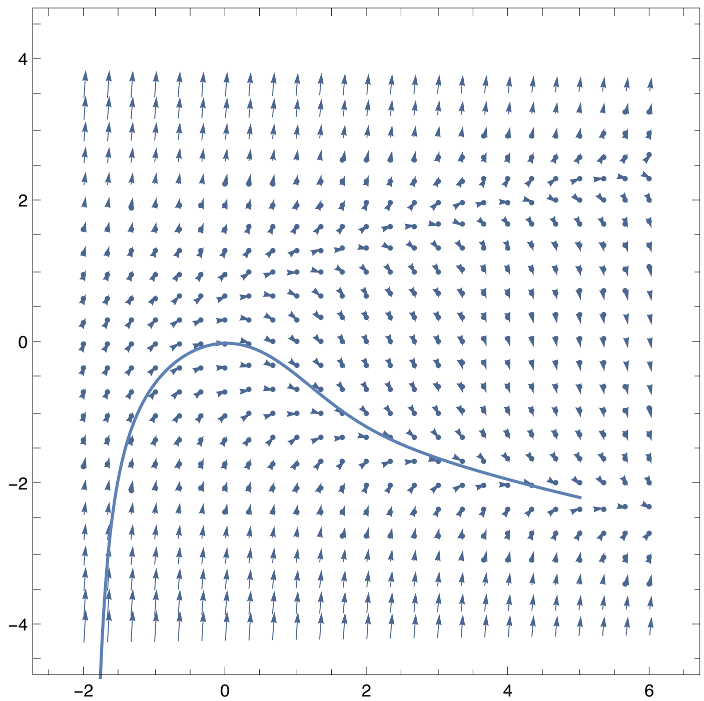
In[∘]:=
```
g3 = Plot[Evaluate[y[x] /. sol], {x, -2, 5}]
```

InterpolatingFunction: Input value {-1.99986} lies outside the range of data in the interpolating function. Extrapolation will be used.

Out[∘]=



In[•]:=
```
Show[g2, g3]
```

Out[•]=


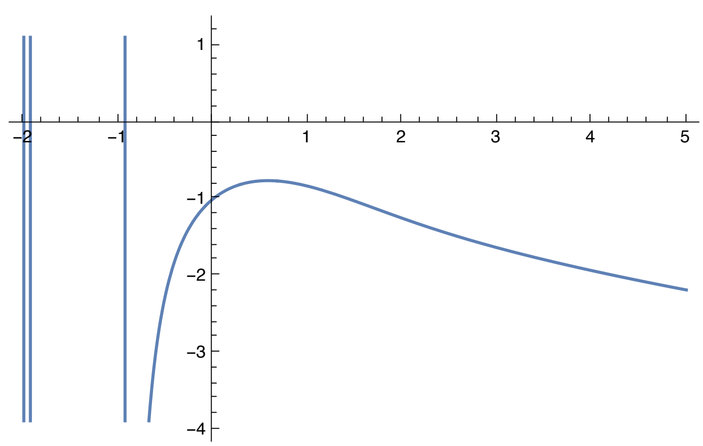
In[•]:=
```
sol2 = NDSolve[{y'[x] == y[x]^2 - x, y[0] == -1}, y, {x, -2, 5}]
```

NDSolve: At x == -0.930564, step size is effectively zero; singularity or stiff system suspected.

Out[•]=
```
{{y → InterpolatingFunction[ Domain: {{-0.931, 5.}} Output: scalar ]}}
```

In[•]:=
```
g4 = Plot[Evaluate[y[x] /. sol2], {x, -2, 5}]
```

InterpolatingFunction: Input value {-1.99986} lies outside the range of data in the interpolating function. Extrapolation will be used.

Out[•]=


In[•]:=
```
Show[g2, g3, g4]
```

Out[•]=