1-dimensionale Domaenenwand:

Anfangsbedingungen "ungefaehr" (benutze f[x] = x/Sqrt[2] + O(x^3)):

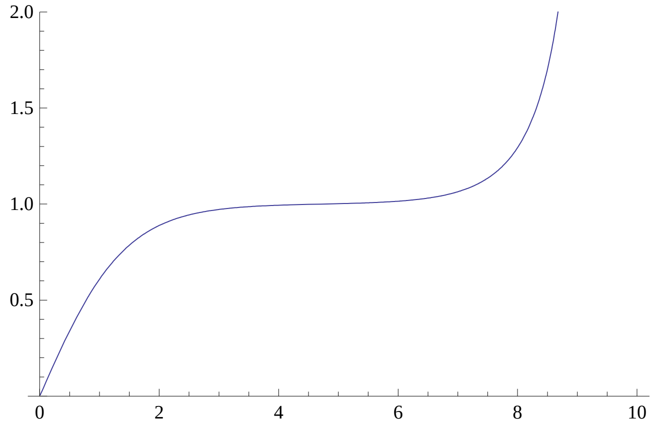
In[14]:=
```
g = NDSolve[{D[f[x], x, x] + f[x] - f[x]^3 == 0,
   f[0.01] == 0.01 / Sqrt[2], f'[0.01] == 1 / Sqrt[2]}, f, {x, 0.01, 10}]
```

```
NDSolve::ndsz : At x == 9.453371276691827`, step
   size is effectively zero; singularity or stiff system suspected. >>
```

Out[14]=
```
{{f -> InterpolatingFunction[{{0.01, 9.45337}}, <>]}}
```

In[15]:=
```
Plot[Evaluate[f[x] /. g], {x, 0.01, 10}, PlotRange -> {0, 2}]
```

Out[15]=



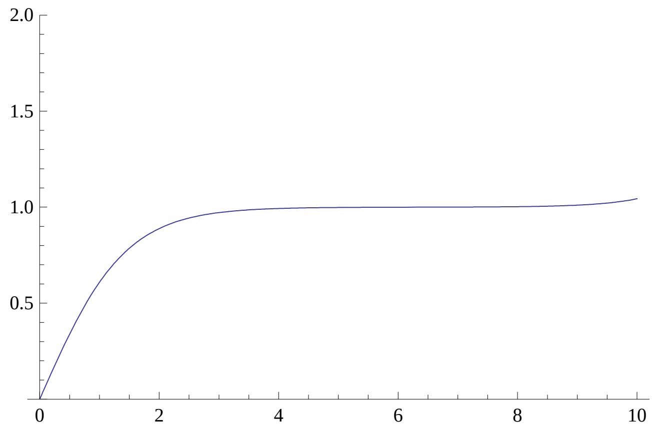
Anfangsbedingungen genauer (starte bei kleinerer x-Koordinate):

In[16]:=
```
g = NDSolve[{D[f[x], x, x] + f[x] - f[x]^3 == 0,
   f[0.001] == 0.001 / Sqrt[2], f'[0.001] == 1 / Sqrt[2]}, f, {x, 0.001, 10}]
```

Out[16]=
```
{{f -> InterpolatingFunction[{{0.001, 10.}}, <>]}}
```

In[17]:= `Plot[Evaluate[f[x] /. g], {x, 0.001, 10}, PlotRange → {0, 2}]`

Out[17]=



2-dimensionaler Wirbel:

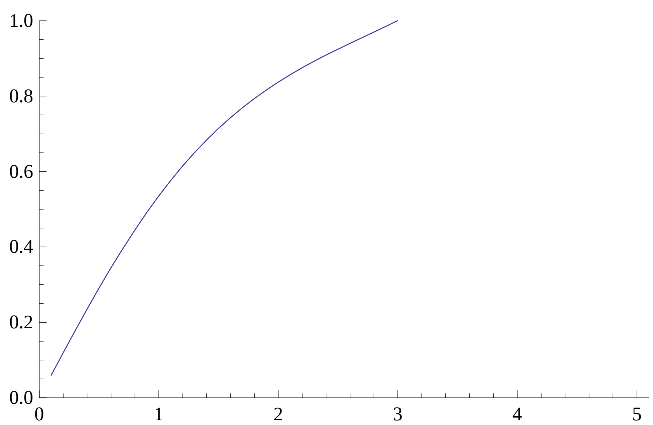
Normierung diesmal nicht bekannt; muss Anfangsbedingung variieren (f[x]=c (x-x^3/8 + O(x^5))):

In[135]:=
```
c = 0.6; g = NDSolve[{D[f[x], x, x] + D[f[x], x] / x - f[x] / x^2 + f[x] - f[x]^3 == 0,
   f[0.1] == c (0.1 - 0.1^3 / 8), f'[0.1] == c (1 - 3 / 8 × 0.1^2)}, f, {x, 0.1, 5}]
```

Out[135]= `{{f → InterpolatingFunction[{{0.1, 5.}}, <>]}}`

In[136]:= `Plot[Evaluate[f[x] /. g], {x, 0.1, 5}, PlotRange → {0, 1}]`

Out[136]=

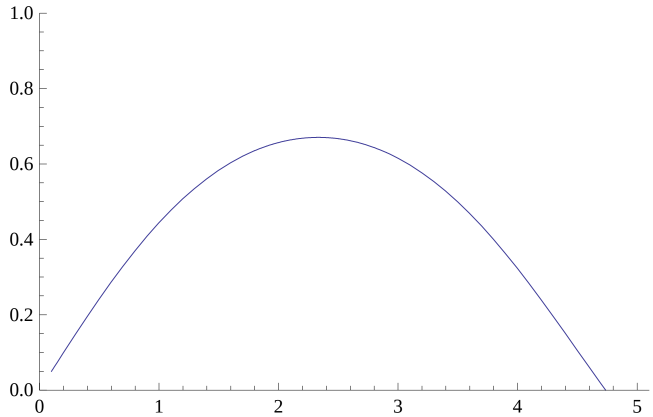


In[137]:=
```
c = 0.5; g = NDSolve[{D[f[x], x, x] + D[f[x], x] / x - f[x] / x^2 + f[x] - f[x]^3 == 0,
   f[0.1] == c (0.1 - 0.1^3 / 8), f'[0.1] == c (1 - 3 / 8 × 0.1^2)}, f, {x, 0.1, 5}]
```

Out[137]= `{{f → InterpolatingFunction[{{0.1, 5.}}, <>]}}`

In[138]:=
```
Plot[Evaluate[f[x] /. g], {x, 0.1, 5}, PlotRange → {0, 1}]
```

Out[138]=



In[164]:=
```
c = 0.5835; g = NDSolve[{D[f[x], x, x] + D[f[x], x] / x - f[x] / x^2 + f[x] - f[x]^3 == 0,
    f[0.1] == c (0.1 - 0.1^3 / 8), f'[0.1] == c (1 - 3 / 8 × 0.1^2)}, f, {x, 0.1, 5}];
Plot[Evaluate[f[x] /. g], {x, 0.1, 5}, PlotRange → {0, 1}]
```

Out[165]=