

# Difficult plots

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```
In[1]:= SetOptions[
  {
    Plot
  },
  AxesStyle -> Directive[
    Hue[5 / 6],
    8
  ],
  FrameStyle -> Directive[
    Hue[5 / 6],
    8
  ]
];
```

```
In[2]:= f[x_, a_, b_, c_] :=  $\sqrt{a^{2/x} + b * a^{1/x} + c} - a^{1/x}$ 
```

```
In[3]:= Limit[f[x, 2, 1, 4], x → 0, Direction → -1]
```

```
Out[3]= Limit[ $-2^{\frac{1}{x}} + \sqrt{4 + 2^{\frac{1}{x}} + 2^{2/x}}$ , x → 0, Direction → -1]
```

```
In[4]:= L[ε_] := Limit[f[x, 2, 1, 4], x → ε, Direction → -1]
```

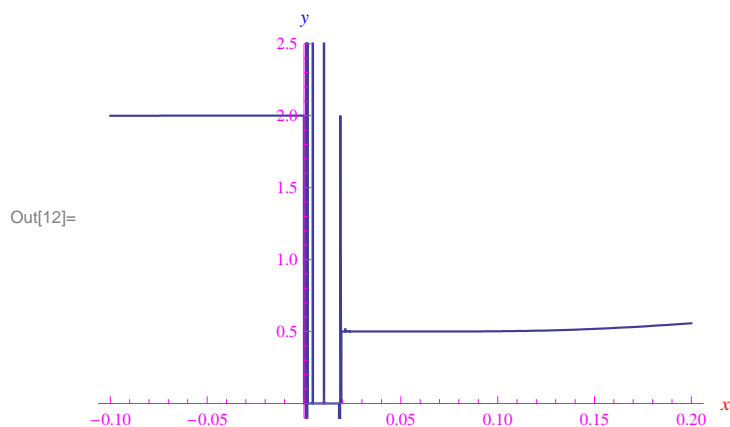
```
In[5]:= L[10^-1] // N
```

```
Out[5]= 0.50183
```

```

In[12]:= plot1 = Plot[
  f[x, 2, 1, 4],
  {x, -0.1, 0.2},
  PlotRange -> {-0.1, 2.5},
  PlotStyle -> Thickness[0.0035],
  AxesLabel ->
  {
    Style["x", Small, Red, Italic],
    Style["y", Small, Blue, Italic]
  }
]

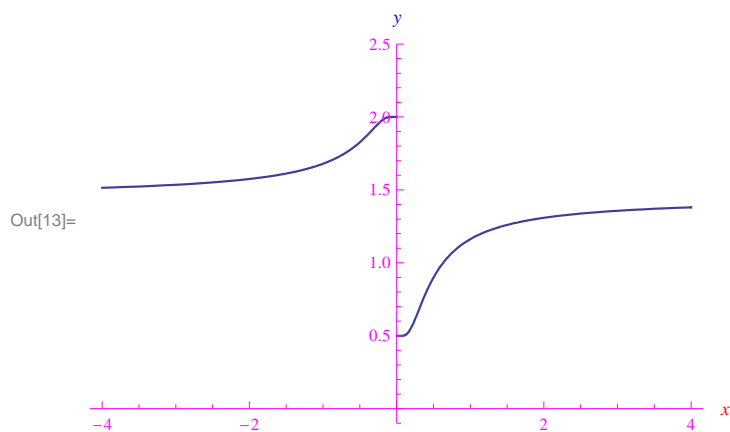
```



```

In[13]:= plot2 = Plot[
  f[x, 2, 1, 4],
  {x, -4, 4},
  Exclusions -> x == 0,
  PlotStyle -> Thickness[0.0035],
  WorkingPrecision -> 400,
  AxesLabel ->
  {
    Style["x", Small, Red, Italic],
    Style["y", Small, Blue, Italic]
  },
  PlotRange -> {-0.1, 2.5}
]

```



```
In[14]:= GraphicsArray[{plot1, plot2}]
```

