Calcolo di un limite con il teorema dei Carabinieri

In[1]:=
```
f[x_] := Sin[1/Sin[x]] Sin[x]; h[x_] := Log[x]; g[x_] := -Log[x]
```

In[2]:=
```
Limit[
 f[x],
 x → π
]
```

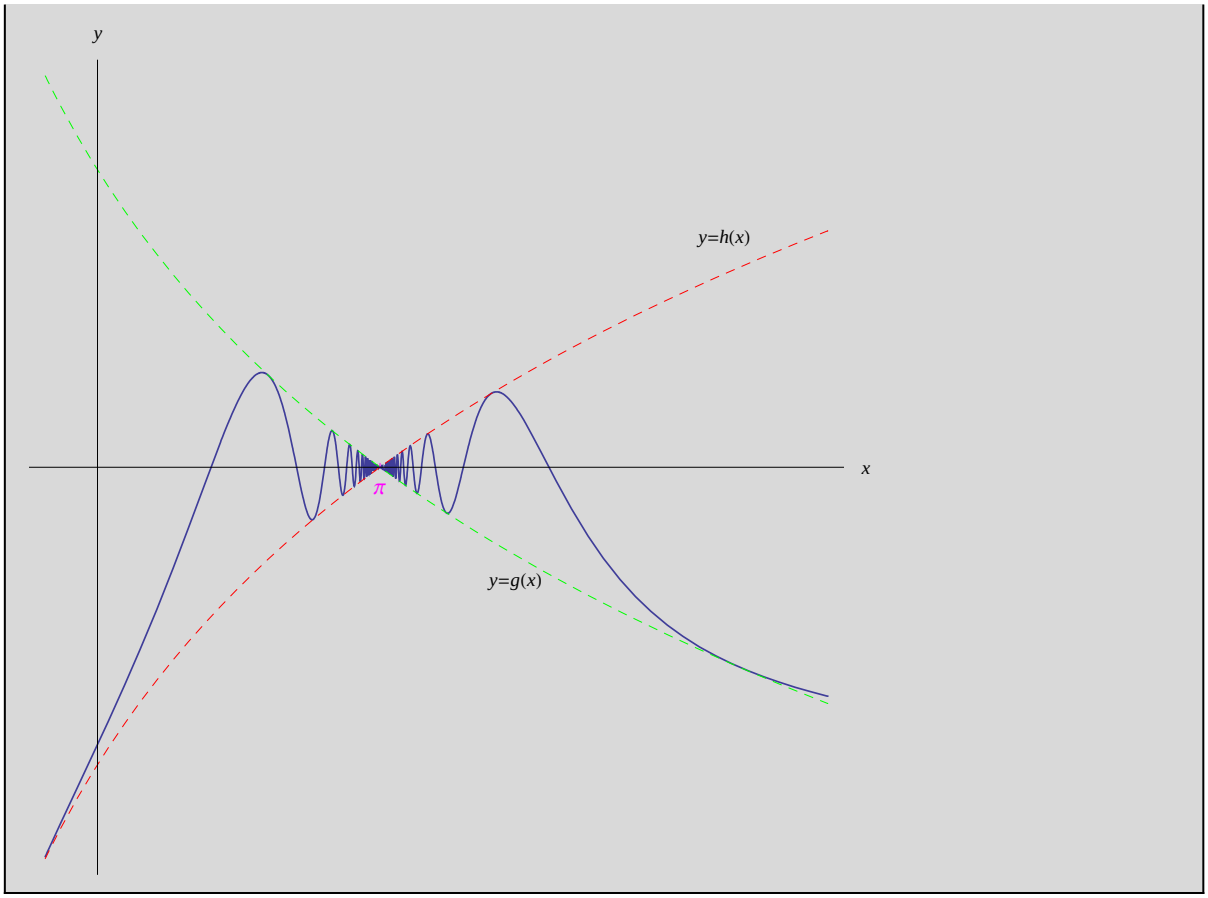
Out[2]=
```
0
```

In[3]:=

```
plots = Plot[
  {
   Sin[1/Sin[x]] Log[Abs[(x - π) + 1]],
   Log[Abs[(x - π) + 1]],
   -Log[Abs[(x - π) + 1]]
  },
  {x, 2.5, 4},
  AxesLabel →
   {
    "x", "y"
   },
  ImageSize →
   {
    400, 400
   },
  PlotStyle →
   {
    Thickness[0.002],
    {
     Dashed, Thickness[0.001], Red
    },
    {
     Dashed, Thickness[0.001], Green
    }
   },
  Ticks →
   {
    {π},
    None
   }
  ,
  TicksStyle → Directive[
    Hue[5 / 6],
    11
   ],
  AspectRatio → 1,
  Epilog →
   {
    Text["y=h(x)", {3.8, 0.6}],
    Text["y=g(x)", {3.4, -0.3}]
   }

 ]
```

Out[3]=



In[4]:=

```
Limit[
 Sin[1/Sin[x]] Log[Abs[(x - π) + 1]],
 x → π - 1
]
```

Out[4]=

$-\infty$

In[5]:=

```
Clear[plots]
```

In[6]:=

```
x0 = π - 1;
```

In[7]:=

```
plots = Plot[
  {
   Sin[1/Sin[x]] Log[Abs[(x - π) + 1]],
   Log[Abs[(x - π) + 1]]
  },
  {x, x0 - 2, x0 + 0.5},
  AxesLabel →
   {
    "x", "y"
   },
  ImageSize →
   {
    400, 400
   },
  PlotStyle →
   {
    Thickness[0.003],
    {
     Dashed, Thickness[0.001], Red
    },
    {
     Dashed, Thickness[0.001], Green
    }
   },
  Ticks →
   {
    {π, π - 1},
    None
   }
  ,
  TicksStyle → Directive[
    Hue[5 / 6],
    11
   ],
  AspectRatio → 1,
  Epilog →
   {
    {Dashed, Line[{{π - 1, 0}, {π - 1, -4}}]}
   }

 ]
```

Out[7]=