

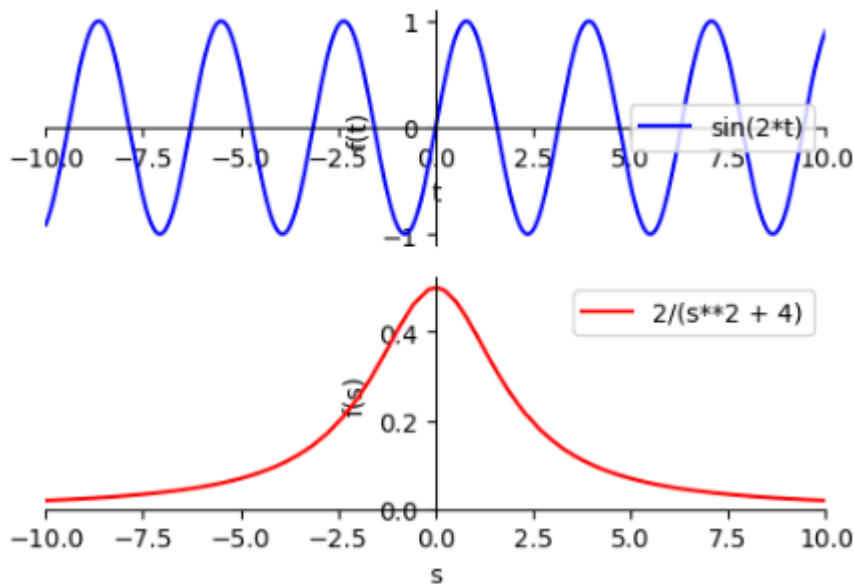
LAB 7: Visualization in time and frequency domain of standard functions

Program 1: Program to represent the Laplace transform of $f(t) = \sin 2t$, both in time and frequency domains.

```
1 from pylab import *
2 from sympy import *
3
4 s,t=symbols('s t',positive = True )
5 f=sin(2*t)
6 F=laplace_transform(f,t,s,noconds=True)
7 print('The Laplace Transform of f is ',F)
8
9 p1= plot (f, show =False , xlim = (-10 , 10), line_color = 'blue', legend = True )
10 p2= plot (F,show =False , xlim = (-10 , 10), line_color = 'red', legend = True )
11 plotgrid = plotting . PlotGrid (2, 1, p1 , p2 , show =False , size =(5. , 3.5))
12 plotgrid . show ()
```

Output:

The Laplace Transform of f is $2/(s^2 + 4)$



Exercise: Write Python program to represent the Laplace transform of the following $f(t)$ both in time and frequency domains.

- (i) $\cos t$ (ii) $\cosh t$ (iii) $\sinh t$ (iv) e^{-t} (v) e^t