* *inverse Laplace Transformer*

Introduction

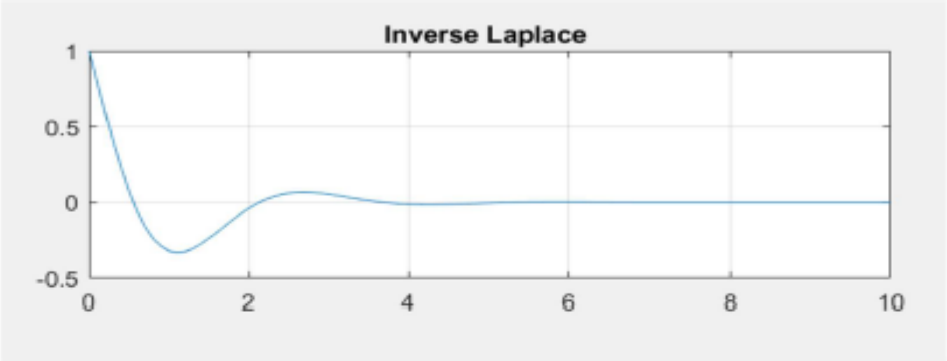
The inverse Laplace transform is the reverse process of the Laplace transform, converting a function from the s-**domain (frequency or complex domain)** back to the **time domain t**.
It is used to recover the time function f(t) from F(s) after applying the Laplace transform.
This transform helps solve differential equations and analyze linear systems more easily.
The result often involves **exponential, sine, cosine functions** or combinations of them depending on the form of F(s).

***EX{1}:**
Find the inverse Laplace Transform of the function:

$$F(t)=\frac{s}{4+(s+1)^2}$$

```
close all
clear all
clc
syms t s
F = s / (4+(s+1)^2);
f = ilaplace(F);
pretty(f)
g = matlabFunction(f);
x = 0:0.1:10;
subplot(2,1,1)
plot(x, g(x))
```

```
title('Inverse Laplace ')
grid on
```



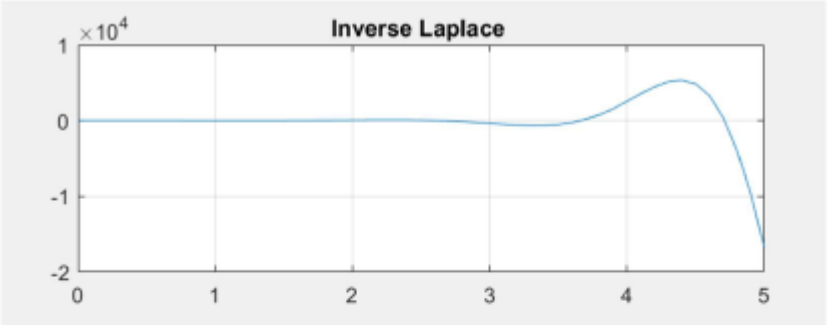
***EX{2}**

Find the inverseLaplace Transform of the function:

$$F(s)=\frac{S-2}{(S-2)^2+9}$$

```
close all
clear all
clc
syms t s
F = (s - 2) / ((s - 2)^2 + 9);
f = ilaplace(F);
pretty(f)
g = matlabFunction(f);
x = 0:0.1:5;
subplot(2,1,1)
plot(x, g(x))
title('Inverse Laplace ')
```

grid on



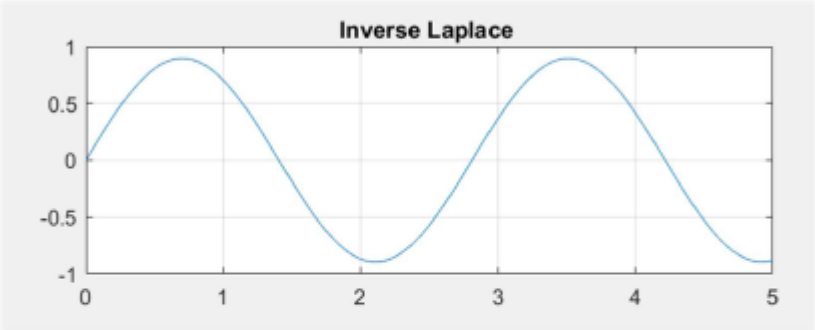
*EX{3}

Find the inverseLaplace Transform of the function:

$$F(s)=\frac{2}{s^2+5}$$

```
close all
clear all
clc
syms t s
F= 2 / (s^2 + 5);
f = ilaplace(F);
pretty(f)
g = matlabFunction(f);
x = 0:0.01:5;
```

```
subplot(2,1,1)
plot(x, g(x))
title('Inverse Laplace ')
grid on
```



Discussion:

Q\ Find the inverseLaplace Transform of the function:

1)$F(s)=\frac{s}{16+(s+1)^2}$

2)$F(s)=\frac{3S+2}{(S-1)(S+2)}$