

Questoes da lista 1 Modelagem de Sistemas

Contents

- [Questao 1](#)
- [Questao 2](#)
- [Questao 3](#)
- [Questao 4](#)
- [Questao 5](#)
- [Questao 6](#)
- [Questao 7](#)
- [Questao 8](#)
- [Questao 9](#)

Questao 1

```
clc;
clear;
close all;

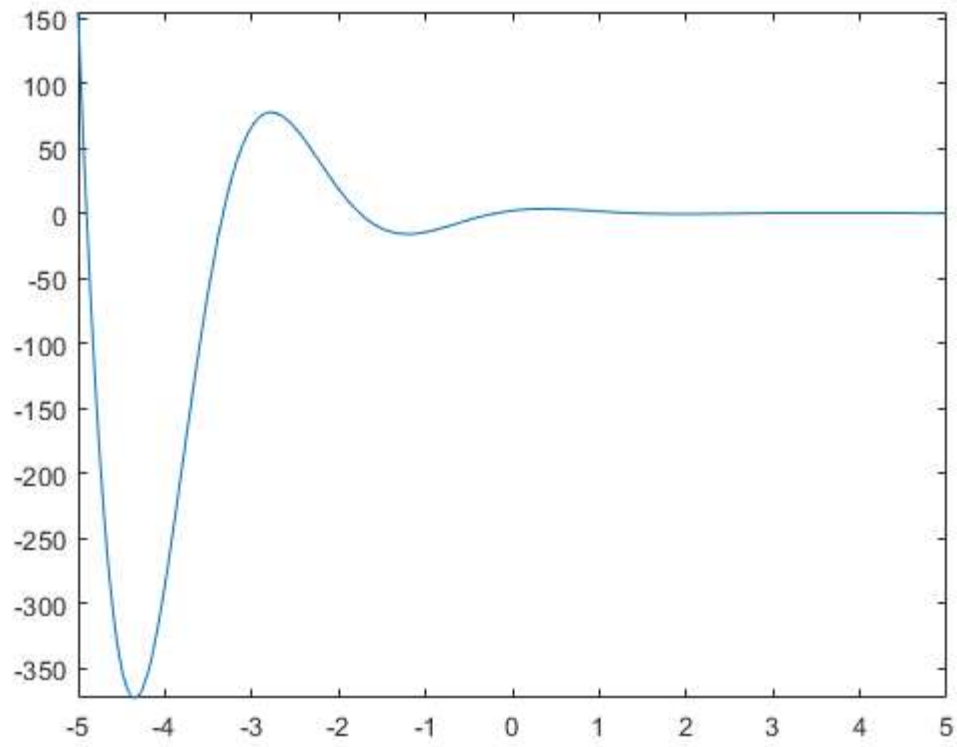
num = [2 12];
den = [1 2 5];

numsym = poly2sym(num);
densym = poly2sym(den);

F = numsym/densym;
resp = ilaplace(F);

pretty(resp)
fplot(resp)
```

$$\exp(-t) \left| \cos(2t) + \frac{\sin(2t)}{2} \right|$$



Questao 2

```

clc;
clear;
close all;

num = [1 2 3 4 5];
den = [1 1 0];

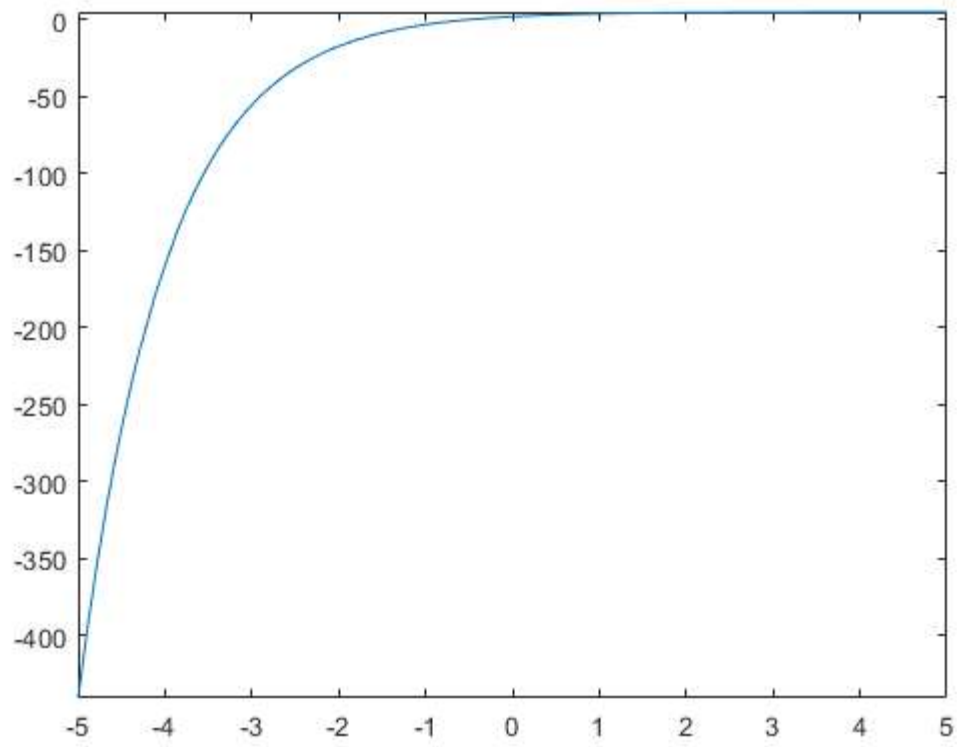
numsym = poly2sym(num);
densym = poly2sym(den);

F = numsym/densym;
resp = ilaplace(F);

pretty(resp)
fplot(resp)

```

$2 \operatorname{dirac}(t) - 3 \exp(-t) + \operatorname{dirac}'(t) + \operatorname{dirac}''(t) + 5$



Questao 3

Feita no papel

Questao 4

```

clc;
clear;
close all;

num = poly2sym(3);
den = poly2sym([1 2 5 0]);

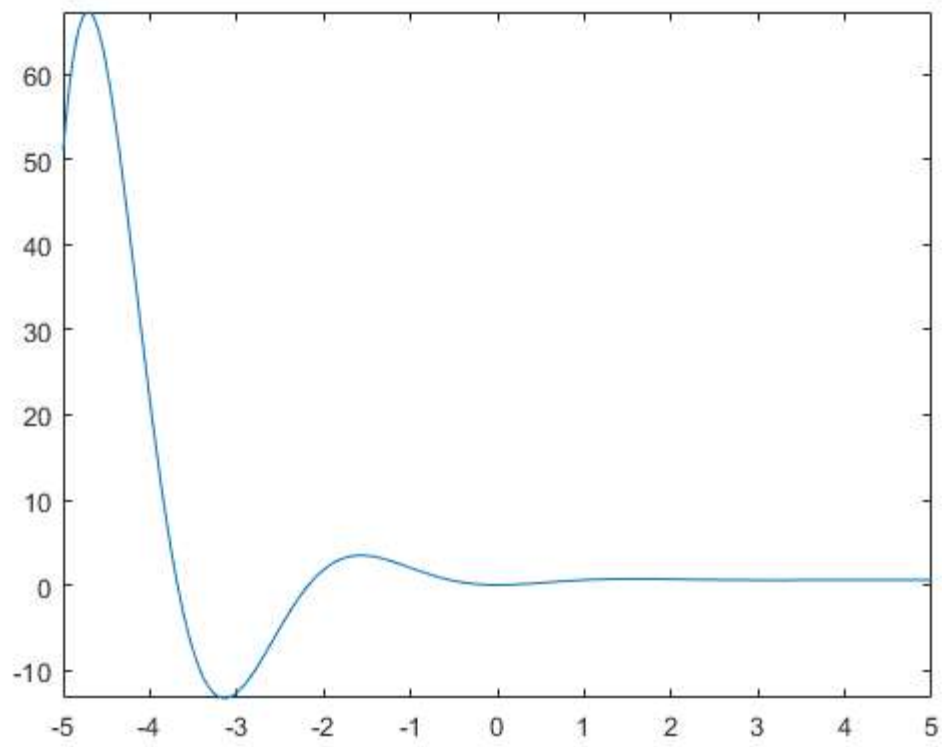
f = num/den;

resp = ilaplace(f);

pretty(resp)
fplot(resp)

```

$$\frac{3}{5} \frac{\exp(-t) \left(\cos(2t) + \frac{\sin(2t)}{2} \right)}{5}$$



Questao 5

```

clc;
clear;
close all;

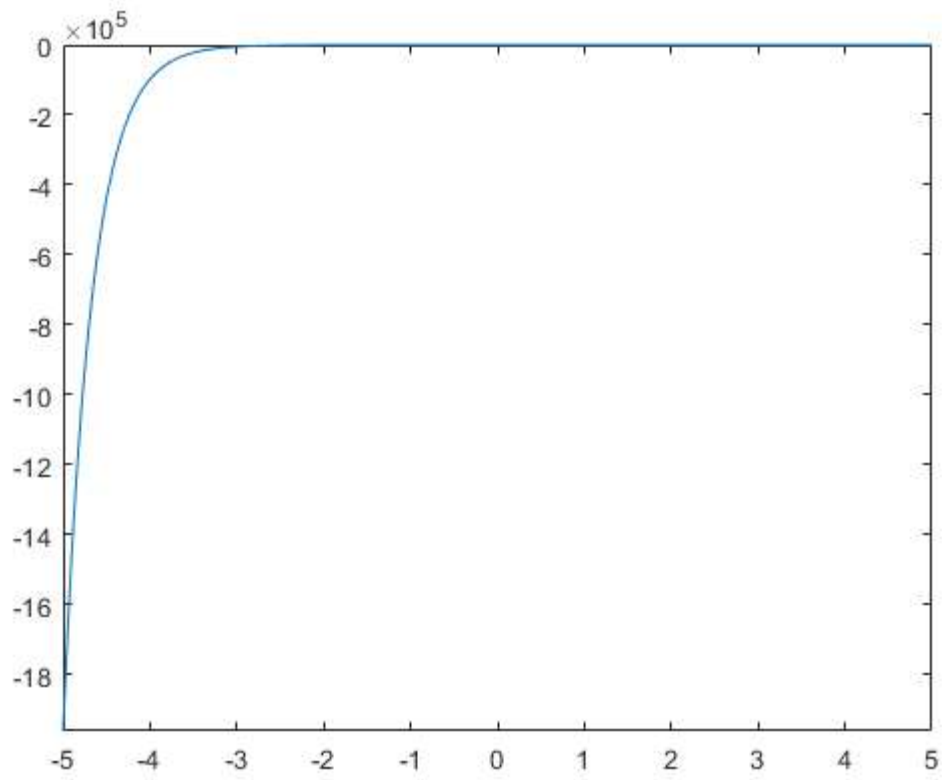
num = poly2sym([6 21]);
den = poly2sym([2 7 3]);

f = num/den;
resp = ilaplace(f);

pretty(resp)
fplot(resp)

```

$$\frac{\exp\left(-\frac{t}{2}\right) \sqrt{18} - \exp(-3t)}{5}$$



Questao 6

Feita no papel

Questao 7

```
clc;
clear;
close all;

syms s t a b e w

num = a*s^2+s*(2*e*w*a-b)-w^2;
den = s^3 + 2*e*w*s^2;

f = num/den;

resp = ilaplace(f, s, t);

pretty(resp)
```

$$\frac{a w e^4 - 2 b e + w^2 t w \exp(-2 e t w) (w - 2 b e)}{4 e^4 w^2 e^2 e^2 w^2}$$

Questao 8

```
clc;
clear;
close all;
```

```
syms s a A w;

num = A*w;
den = s^3+ w^2*s+a*s^2+a*w^2;

f = num/den;
resp = ilaplace(f);

pretty(resp)
```

$$\frac{A a \sin(t w) - A w \cos(t w)}{a^2 + w^2} + \frac{A w \exp(-a t)}{a^2 + w^2}$$

Questao 9

```
clc;
clear;
close all;

syms s t;

num = 3;
den = s^2 +3*s^ + 6;

f = num/den;
resp = ilaplace(f);

pretty(resp)
fplot(resp)
```

$$3 t - \frac{\sqrt[3]{3} \sqrt{6} \sin(\#1) \cosh(\#1)}{2} - \frac{\sqrt[3]{3} \sqrt{6} \sinh(\#1) \cos(\#1)}{2}$$

where

$$\#1 == \frac{\sqrt[3]{3} \sqrt{6} t}{6}$$

