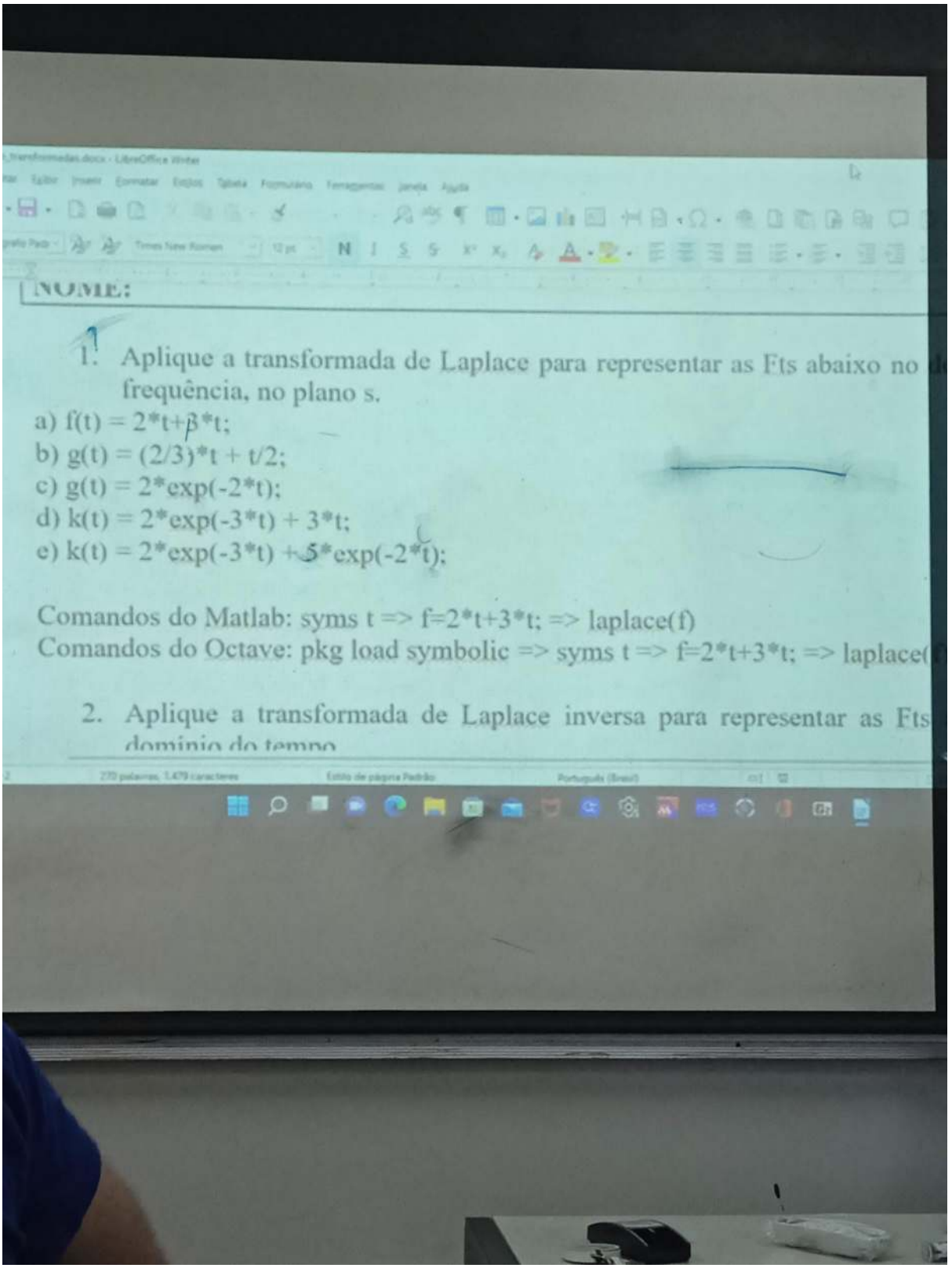
Aula 08-09-2022 aula prática

Usando o Octave Online(Alternativa ao Matlab)
Prática

- Transformada de Laplace
- Transformada inversa de Laplace

- Transformada Z



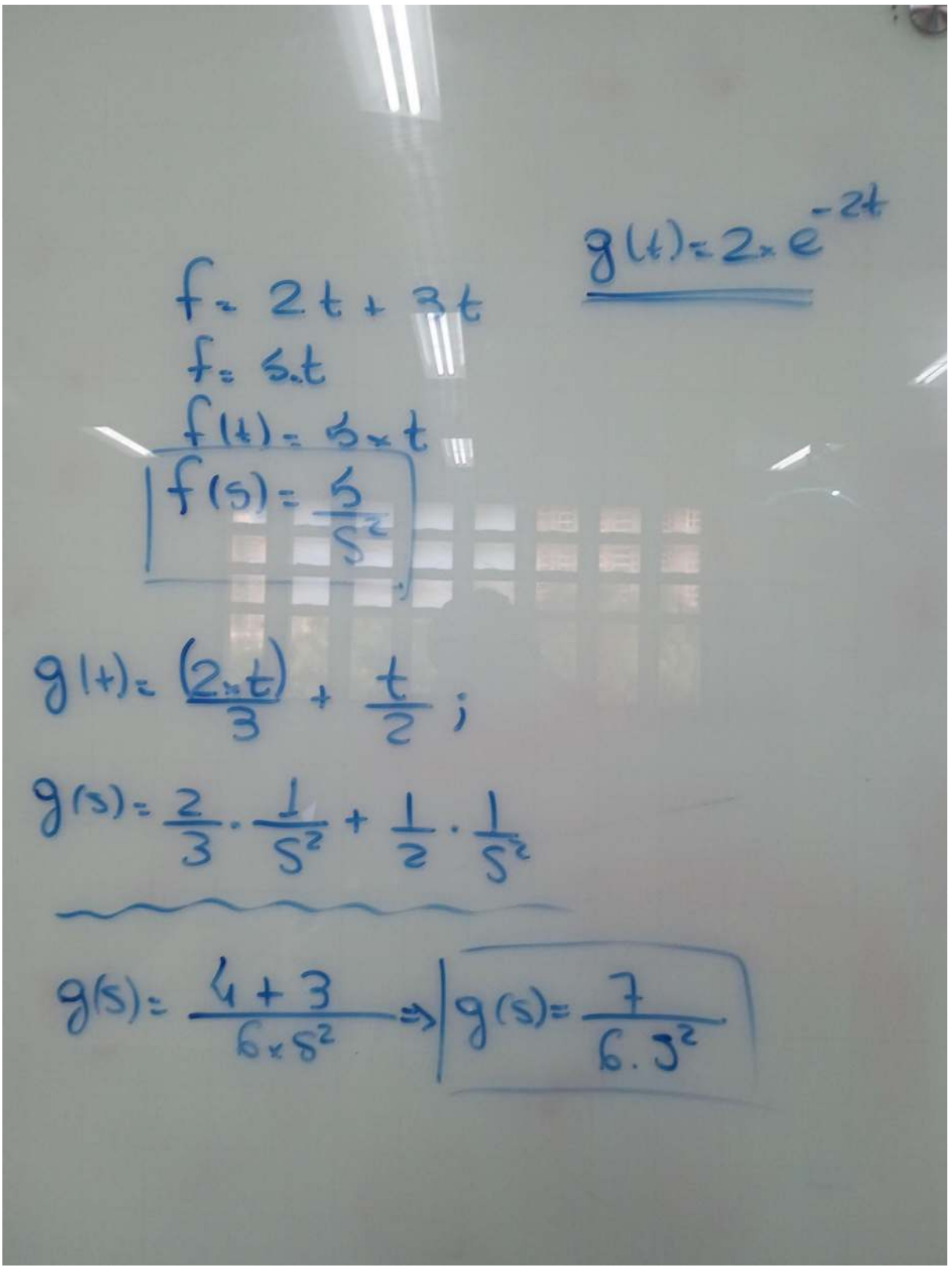
NOME:

1. Aplique a transformada de Laplace para representar as Fts abaixo no d frequência, no plano s.

a) f(t) = 2*t+3*t;
b) g(t) = (2/3)*t + t/2;
c) g(t) = 2*exp(-2*t);
d) k(t) = 2*exp(-3*t) + 3*t;
e) k(t) = 2*exp(-3*t) + 5*exp(-2*t);

Comandos do Matlab: syms t => f=2*t+3*t; => laplace(f)
Comandos do Octave: pkg load symbolic => syms t => f=2*t+3*t; => laplace(

2. Aplique a transformada de Laplace inversa para representar as Fts
domínio do tempo


$g(t) = 2 \times e^{-2t}$
$f = 2t + 3t$
$f = 5.t$
$f(t) = 5 \times t$
$f(s) = \frac{5}{s^2}$
$g(t) = \frac{(2 \times t)}{3} + \frac{t}{2}$;
$g(s) = \frac{2}{3} \cdot \frac{1}{s^2} + \frac{1}{2} \cdot \frac{1}{s^2}$
$g(s) = \frac{4+3}{6 \times s^2} \Rightarrow g(s) = \frac{7}{6.s^2}$

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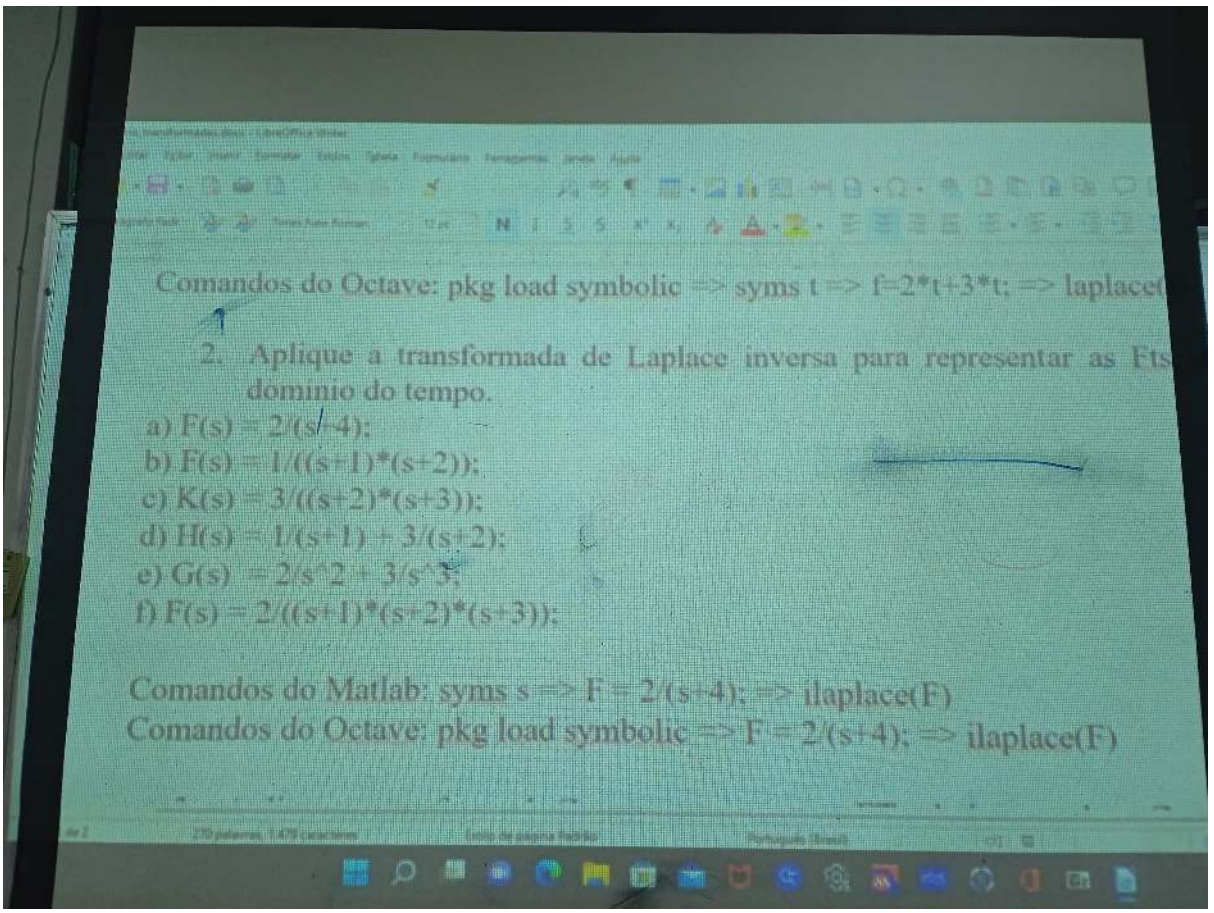
Comandos do Octave: pkg load symbolic => syms t => f=2*t+3*t; => laplace(
2. Aplique a transformada de Laplace inversa para representar as Fts
domínio do tempo.
a) F(s) = 2/(s+4);
b) F(s) = 1/((s+1)*(s+2));
c) K(s) = 3/((s+2)*(s+3));
d) H(s) = 1/(s+1) + 3/(s+2);
e) G(s) = 2/s^2 + 3/s^3;
f) F(s) = 2/((s+1)*(s+2)*(s+3));
Comandos do Matlab: syms s => F = 2/(s+4); => ilaplace(F)
Comandos do Octave: pkg load symbolic => F = 2/(s+4); => ilaplace(F)

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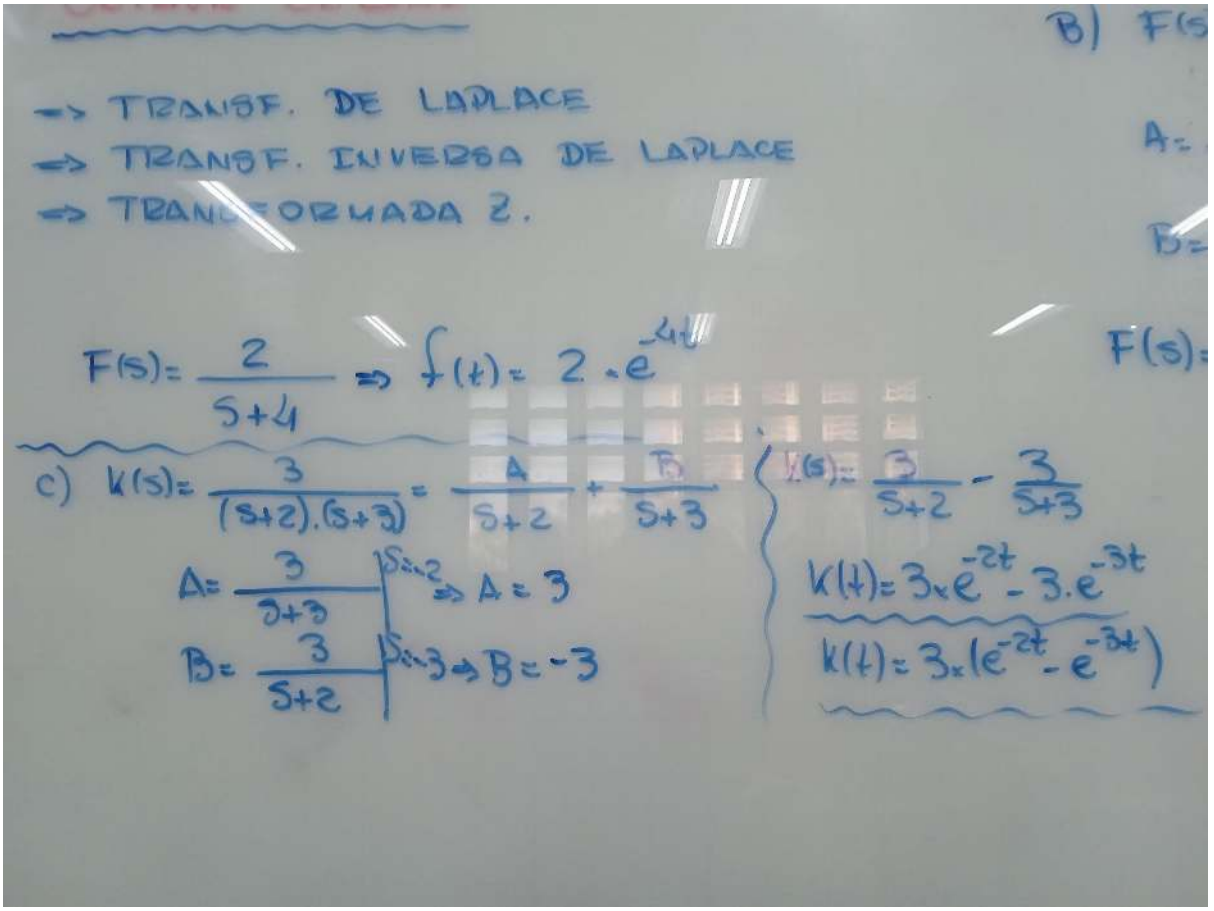
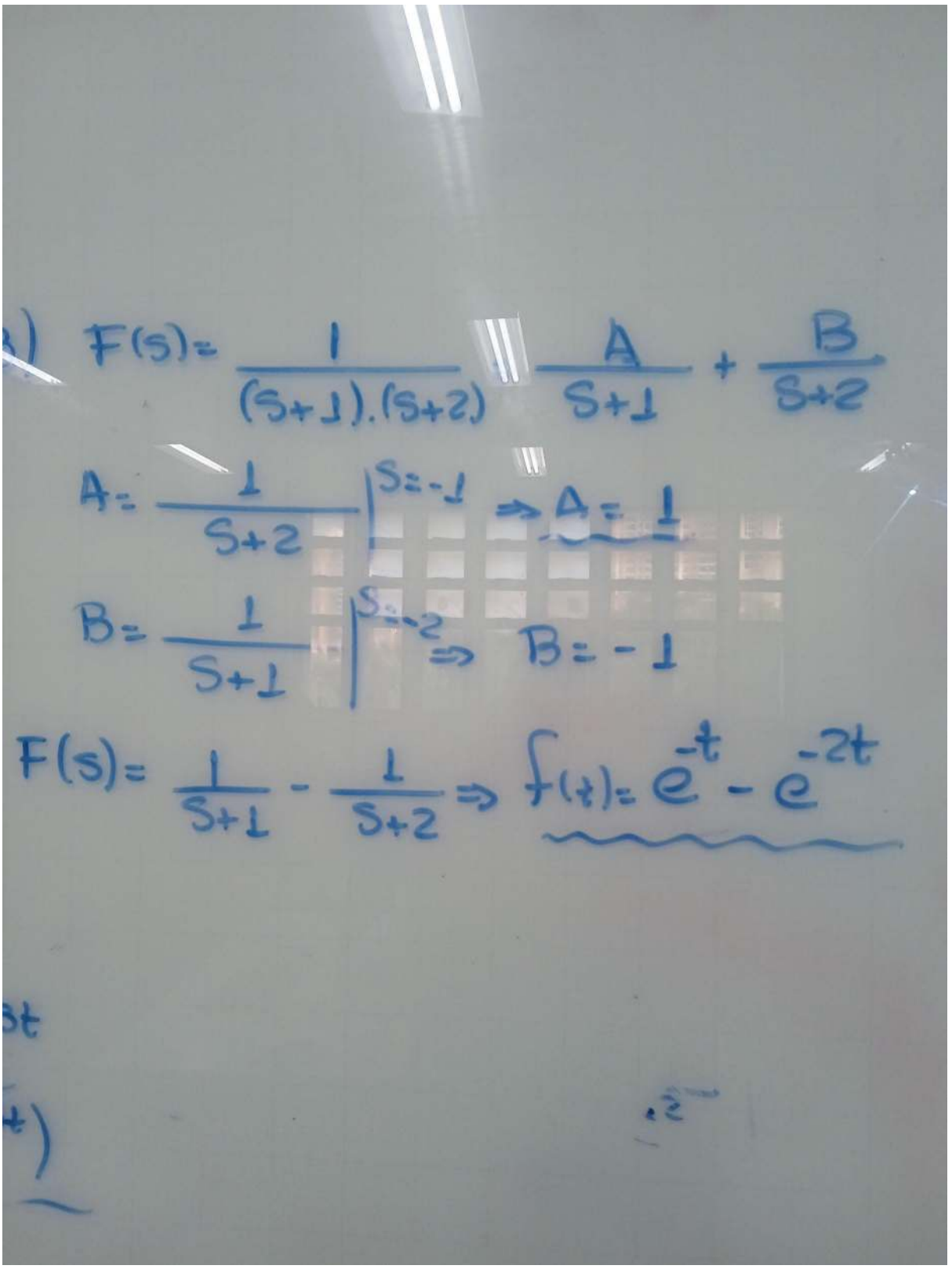
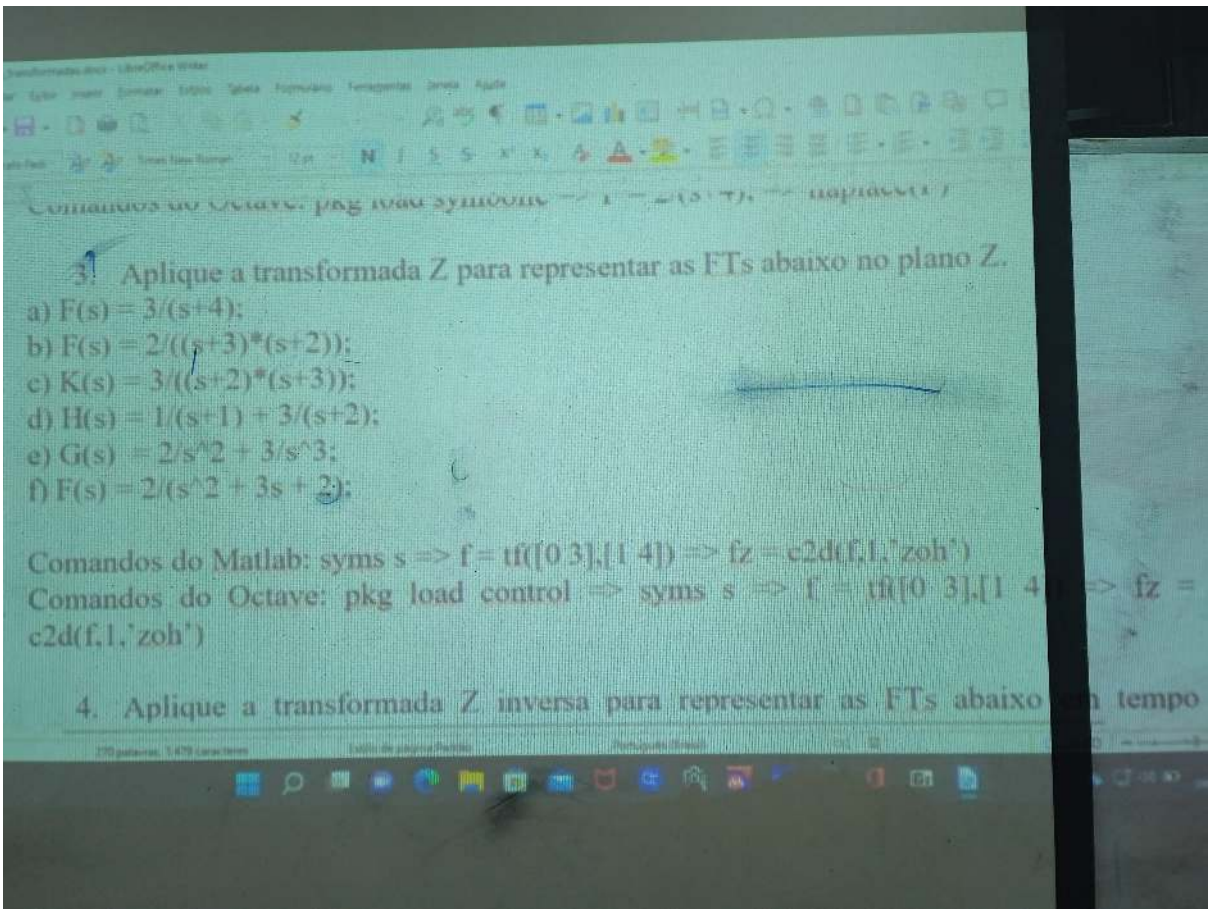

B) F(s
=> TRANSF. DE LAPLACE
=> TRANSF. INVERSA DE LAPLACE
=> TRANSFORMADA Z.
A=
B=
F(s)=
F(s)= 2/(s+4) => f(t)= 2.e^-4t
c) K(s)= 3/((s+2).(s+3)) = A/(s+2) + B/(s+3)
A= 3/(s+3) | s=-2 => A = 3
B= 3/(s+2) | s=-3 => B = -3
K(s)= 3/(s+2) - 3/(s+3)
k(t)= 3.e^-2t - 3.e^-3t
k(t)= 3.(e^-2t - e^-3t)


a) $F(s) = \frac{1}{(s+1).(s+2)} = \frac{A}{s+1} + \frac{B}{s+2}$
$A = \frac{1}{s+2}\Big|_{s=-1} \Rightarrow A = 1$
$B = \frac{1}{s+1}\Big|_{s=-2} \Rightarrow B = -1$
$F(s) = \frac{1}{s+1} - \frac{1}{s+2} \Rightarrow f(t) = e^{-t} - e^{-2t}$

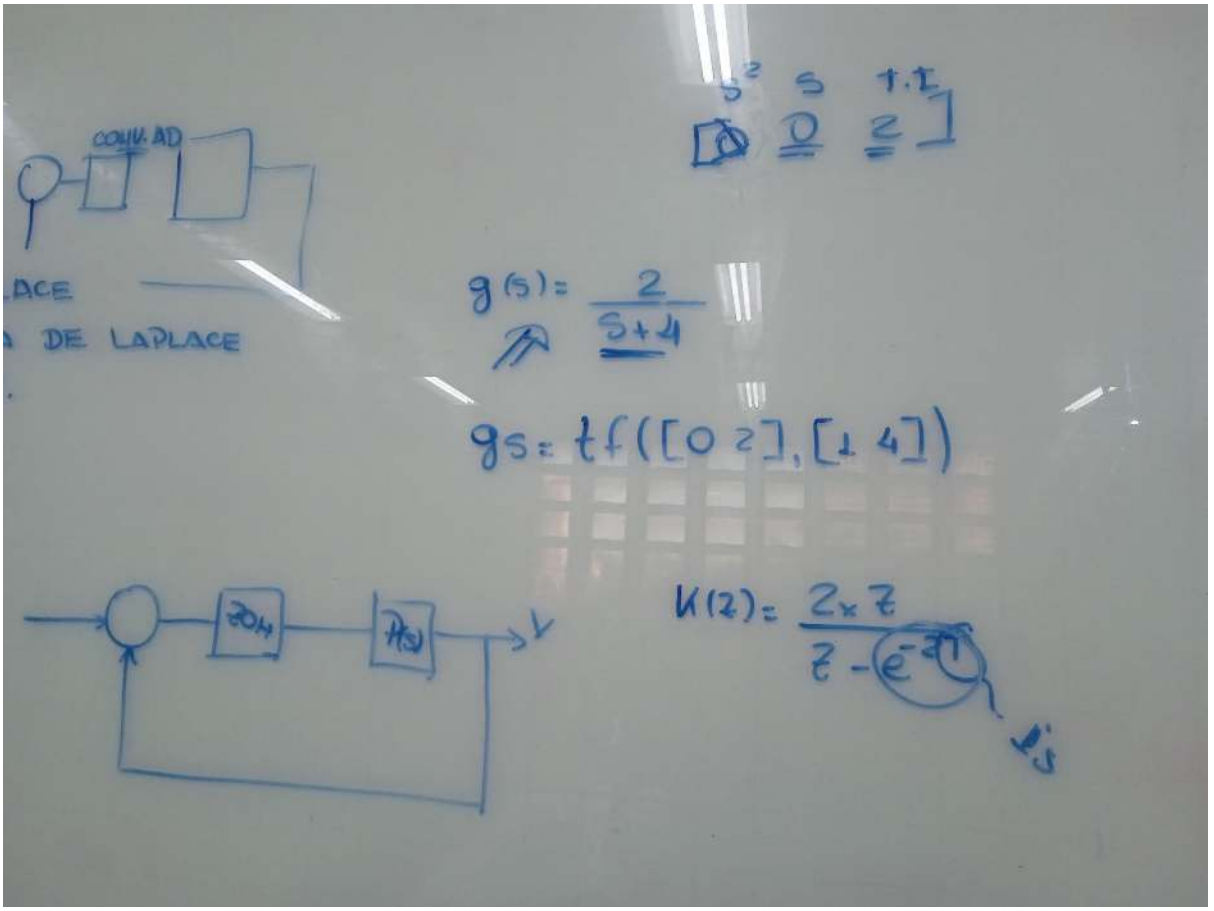


3. Aplique a transformada Z para representar as FTs abaixo no plano Z.

a) F(s) = 3/(s+4);
b) F(s) = 2/((s+3)*(s+2));
c) K(s) = 3/((s+2)*(s+3));
d) H(s) = 1/(s+1) + 3/(s+2);
e) G(s) = 2/s^2 + 3/s^3;
f) F(s) = 2/(s^2 + 3s + 2);

Comandos do Matlab: syms s => f = tf([0 3],[1 4]) => fz = c2d(f,1,'zoh')
Comandos do Octave: pkg load control => syms s => f = tf([0 3],[1 4]) => fz = c2d(f,1,'zoh')

4. Aplique a transformada Z inversa para representar as FTs abaixo [illegible] tempo



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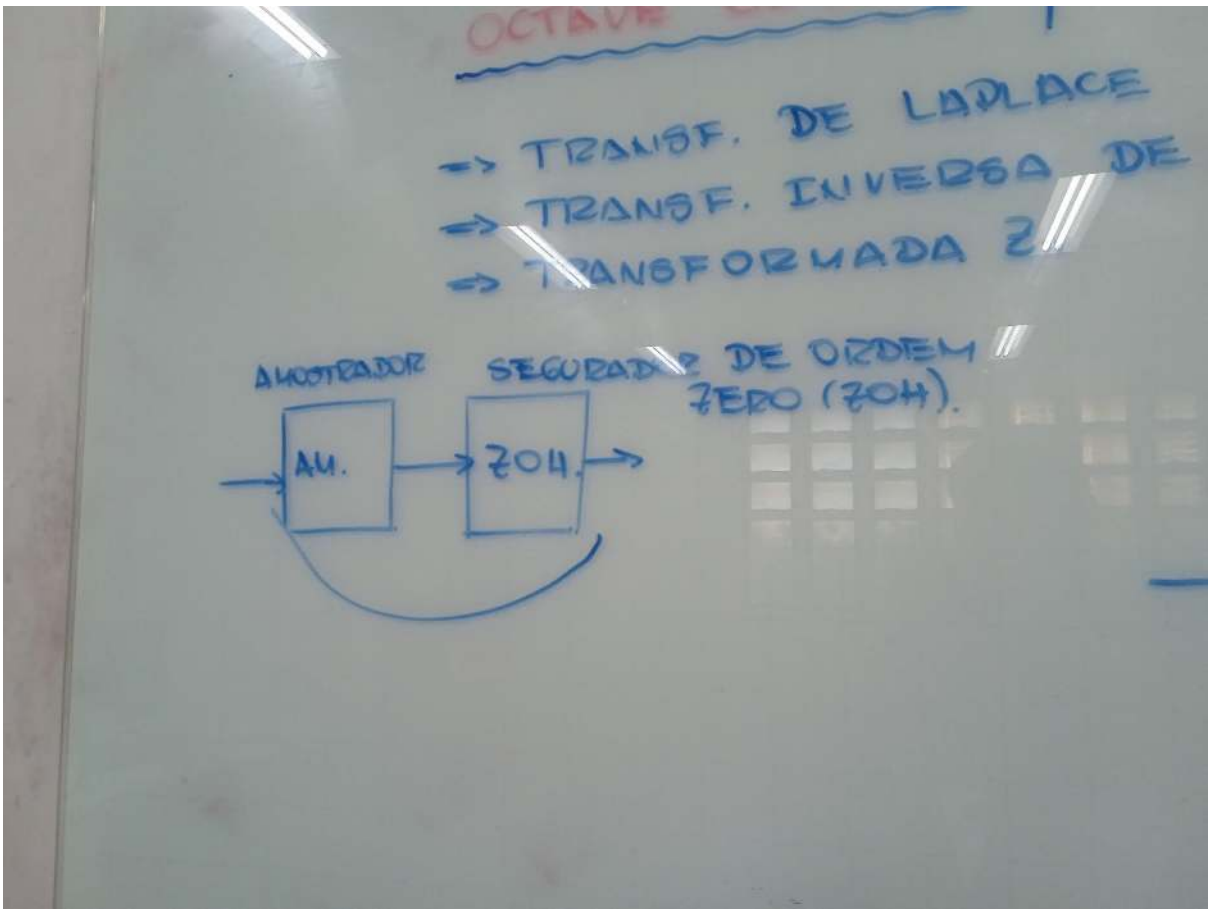
OCTAVE
=> TRANSF. DE LAPLACE
=> TRANSF. INVERSA DE
=> TRANSFORMADA Z
AMOSTRADOR
SEGURADOR DE ORDEM ZERO (ZOH).
AM.
ZOH.