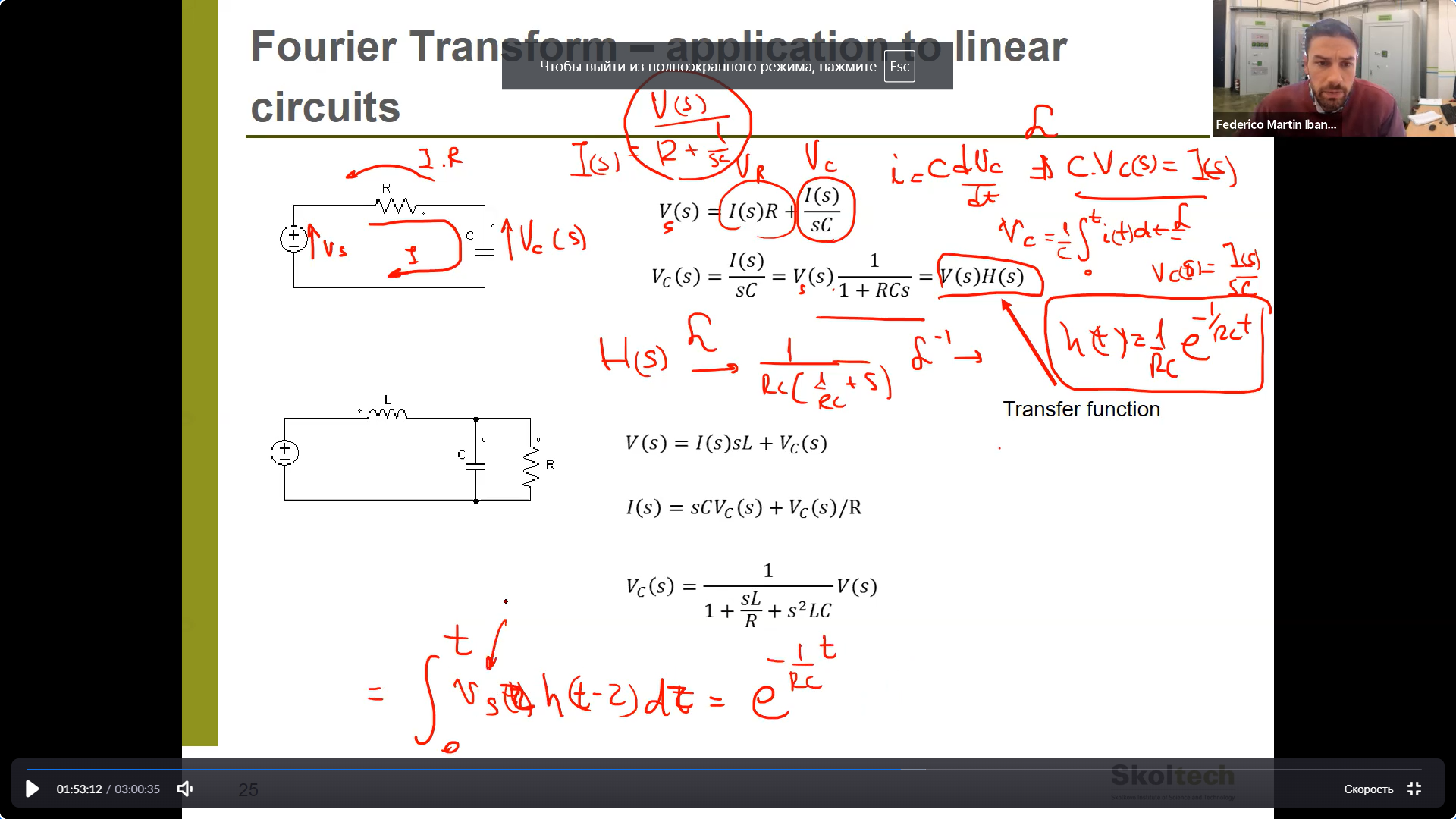
# 3rd Lecture.

Laplace, Fourier Transforms

1. Example



Laplace transformes.

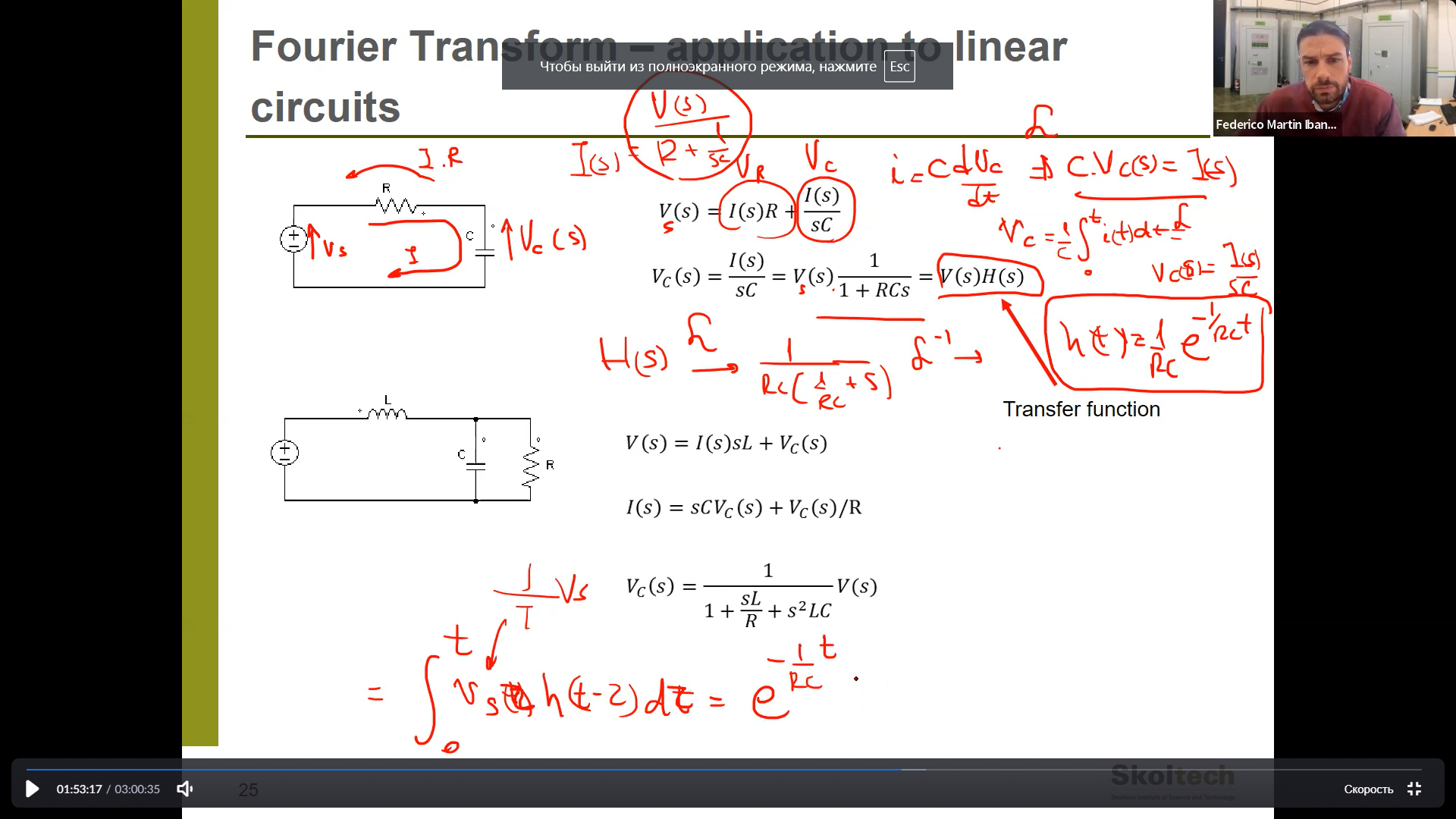
We’re going to find .

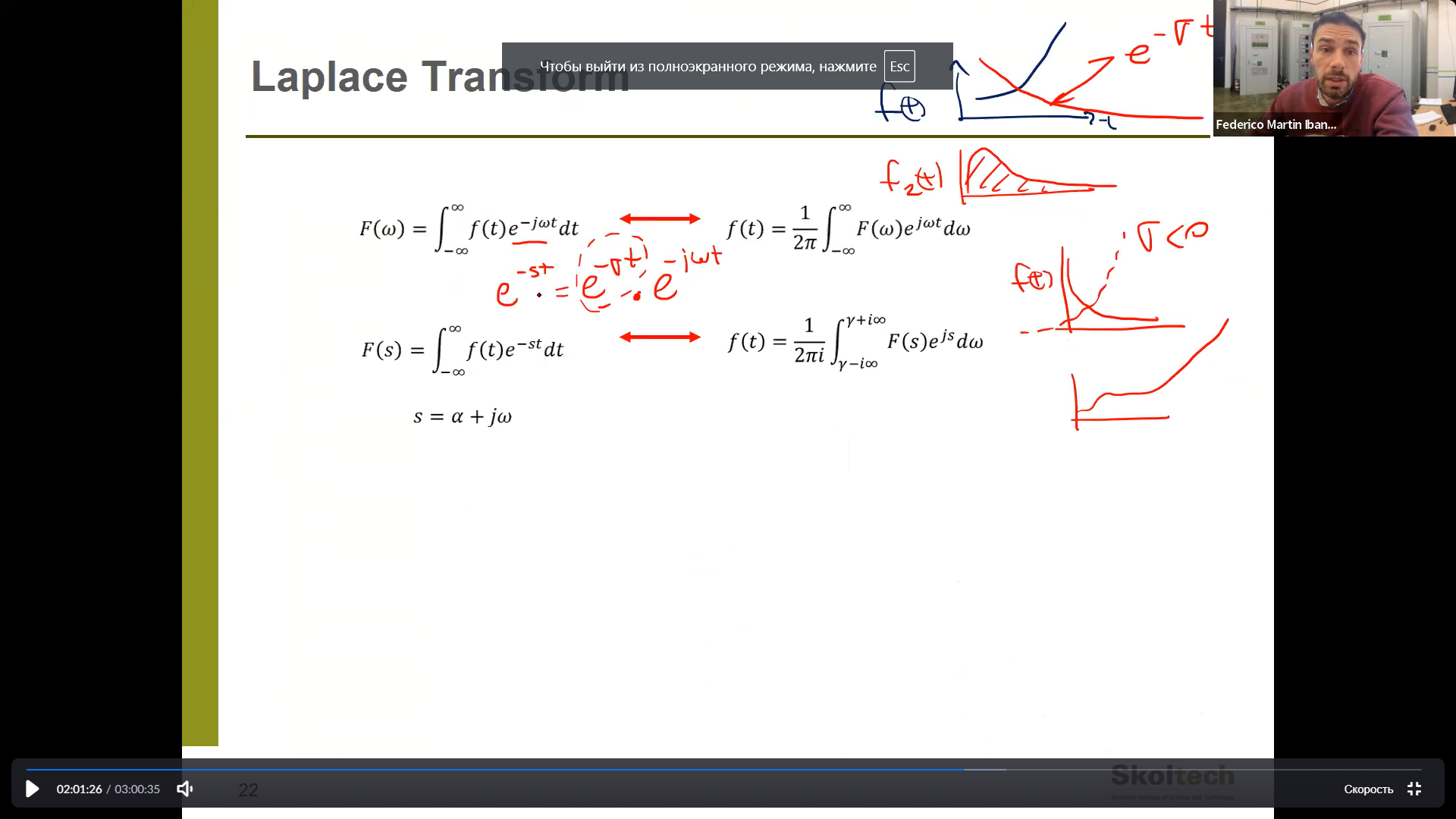
Where

Sometimes it is better to solve diff eq.

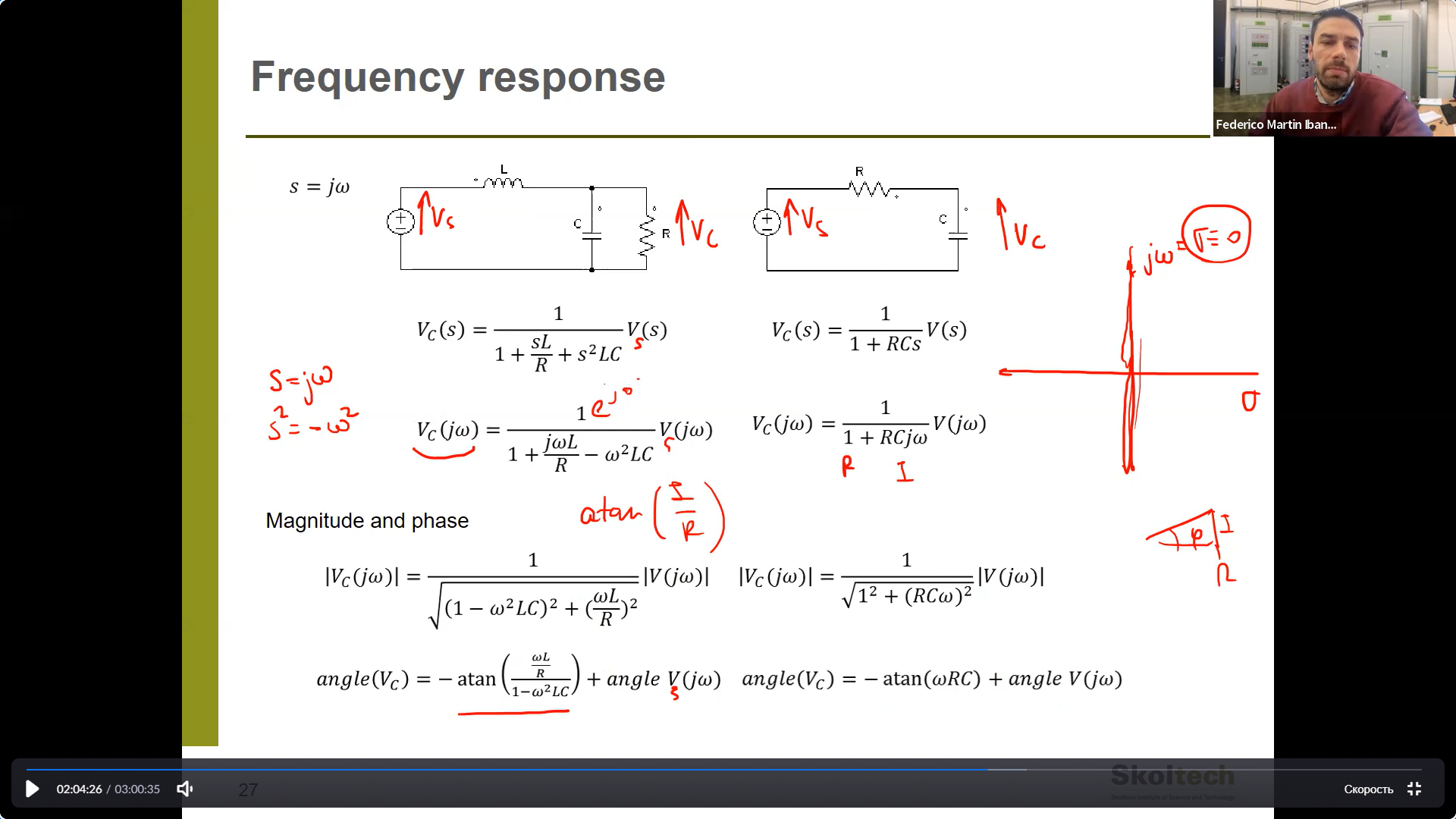
Or you can solve this: (

1. Example

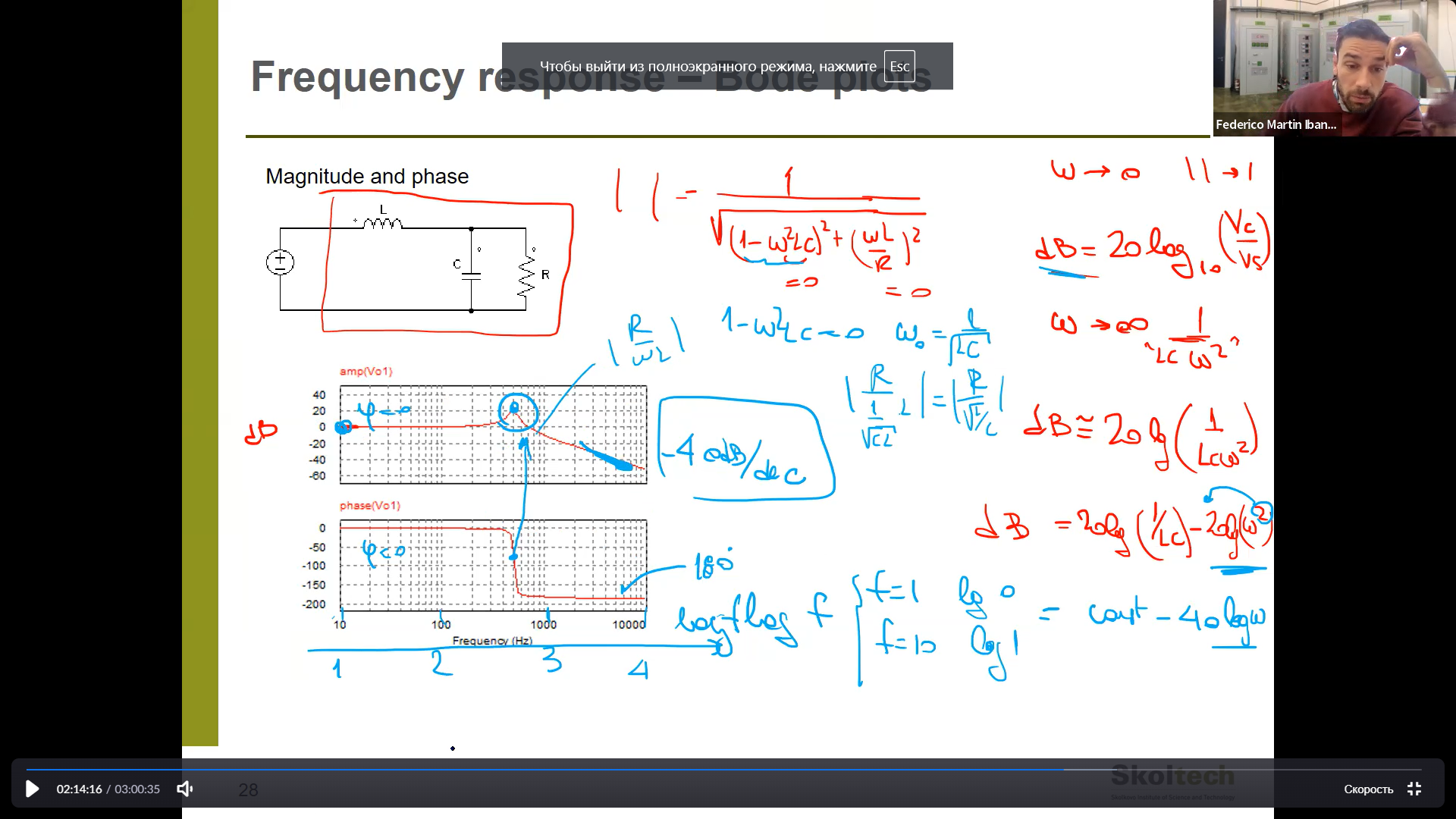


1. Fourier transform

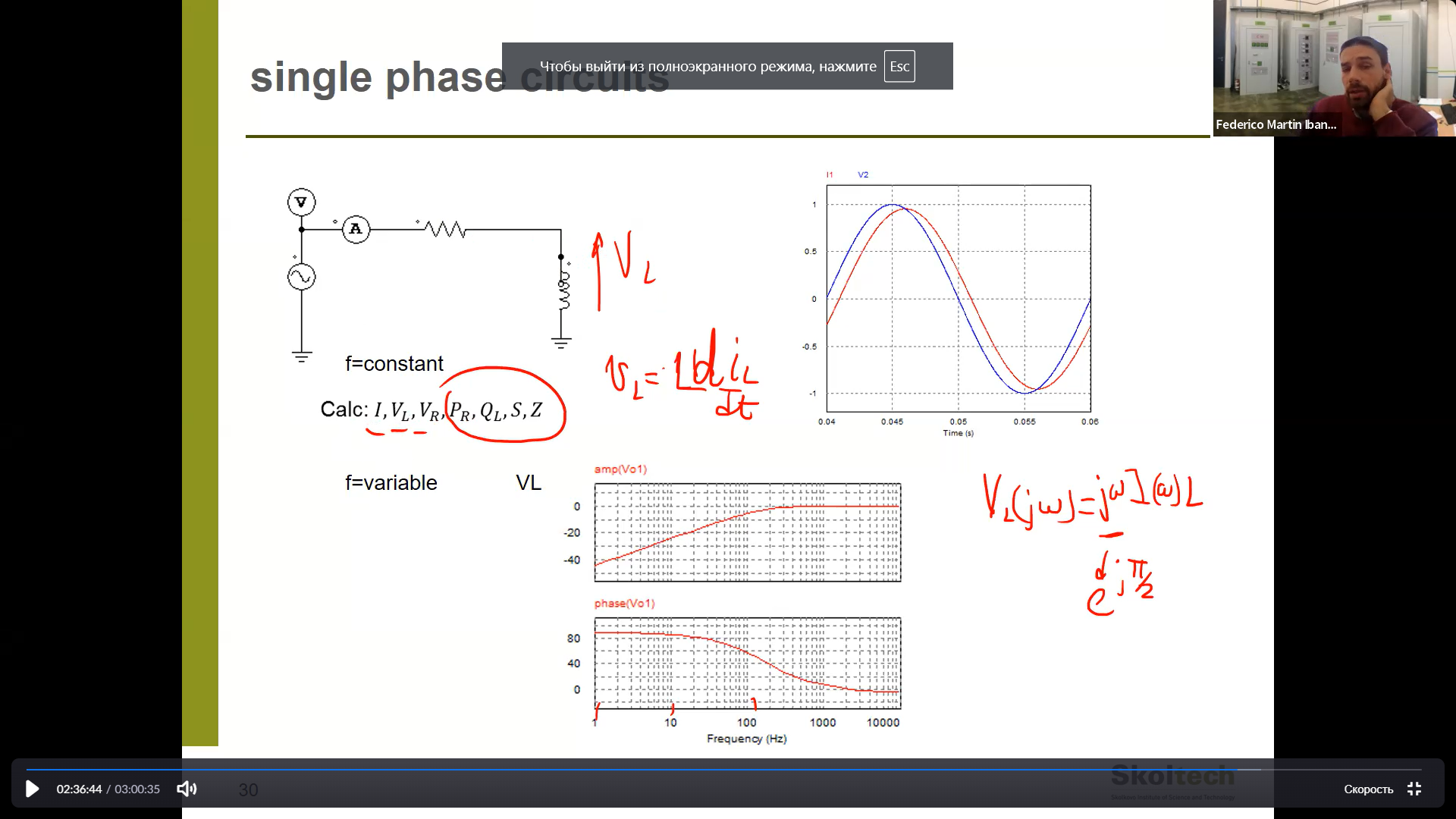
We can change in Laplace s on jw and it is Fourier transform.

angle is imag\_part/real\_part.

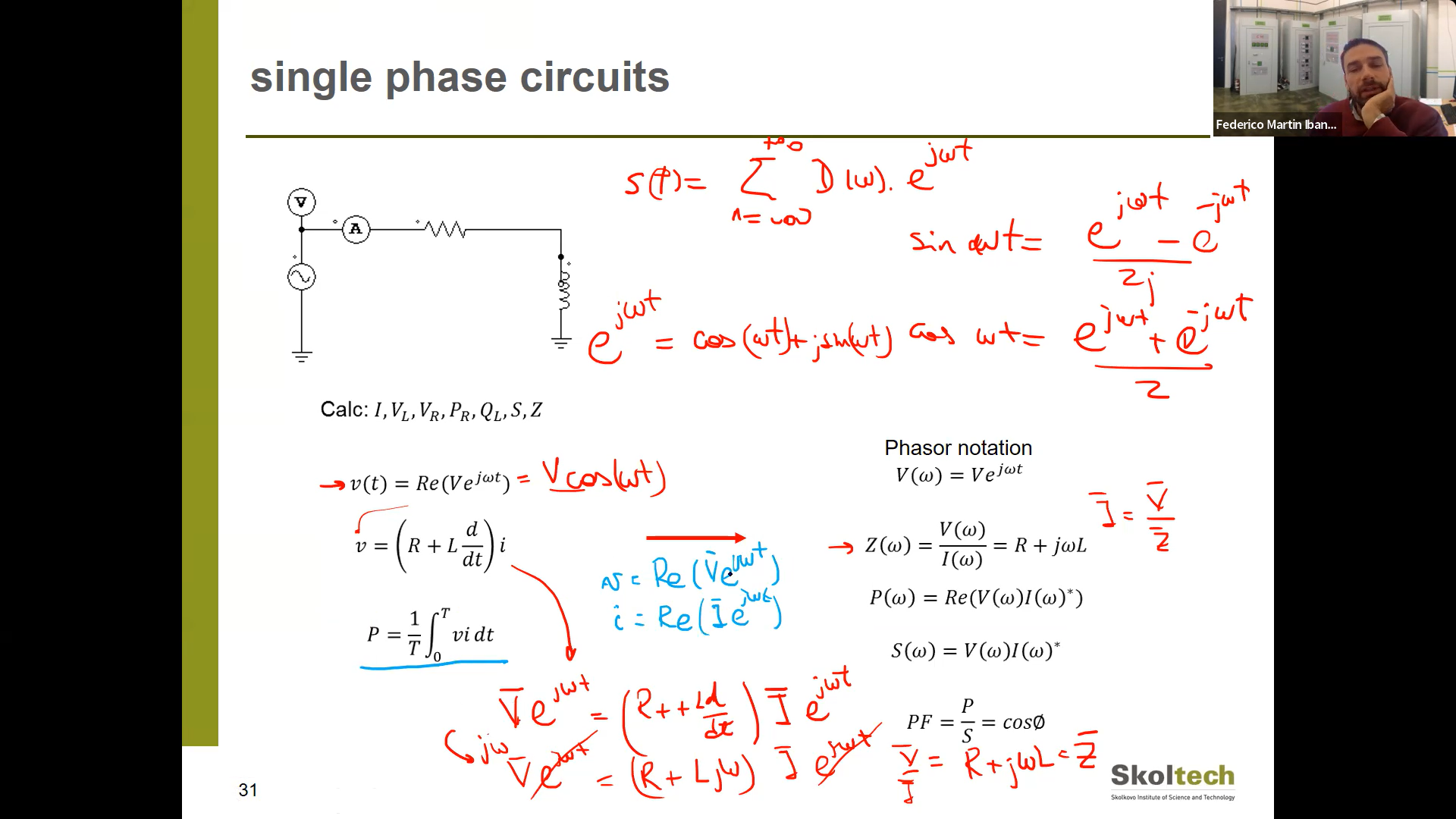
1. Analysis of domains:
2. When
3. When
4. When real part cancels.



1. Analysis of circuit.

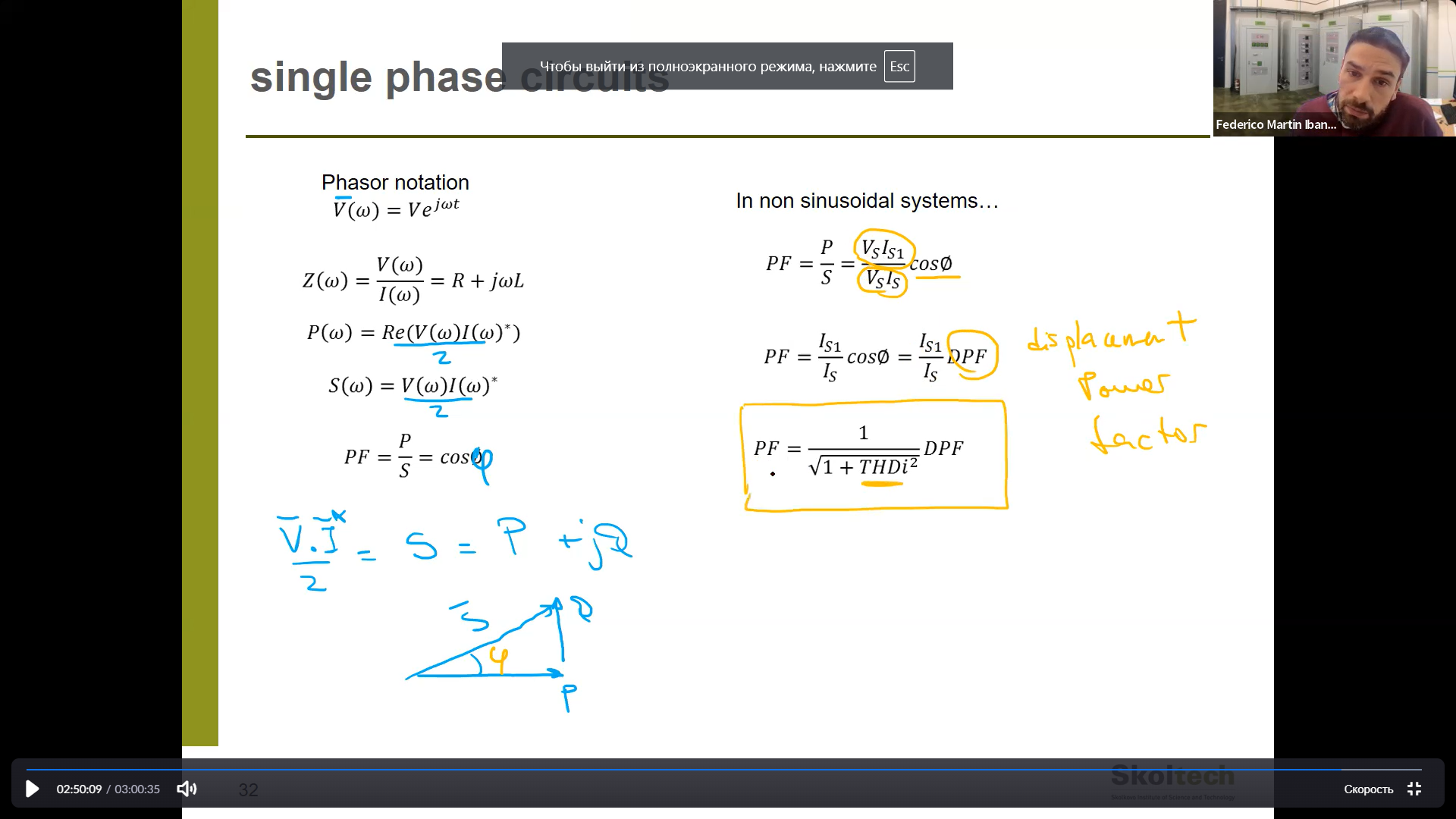


1. Let’s talk about the power



Consider voltage as some im \* exp and the same for current( because we assume voltage is single cos signal with a shift in V, we assume that current is the same frequency with maybe shift in I)

Find Power P



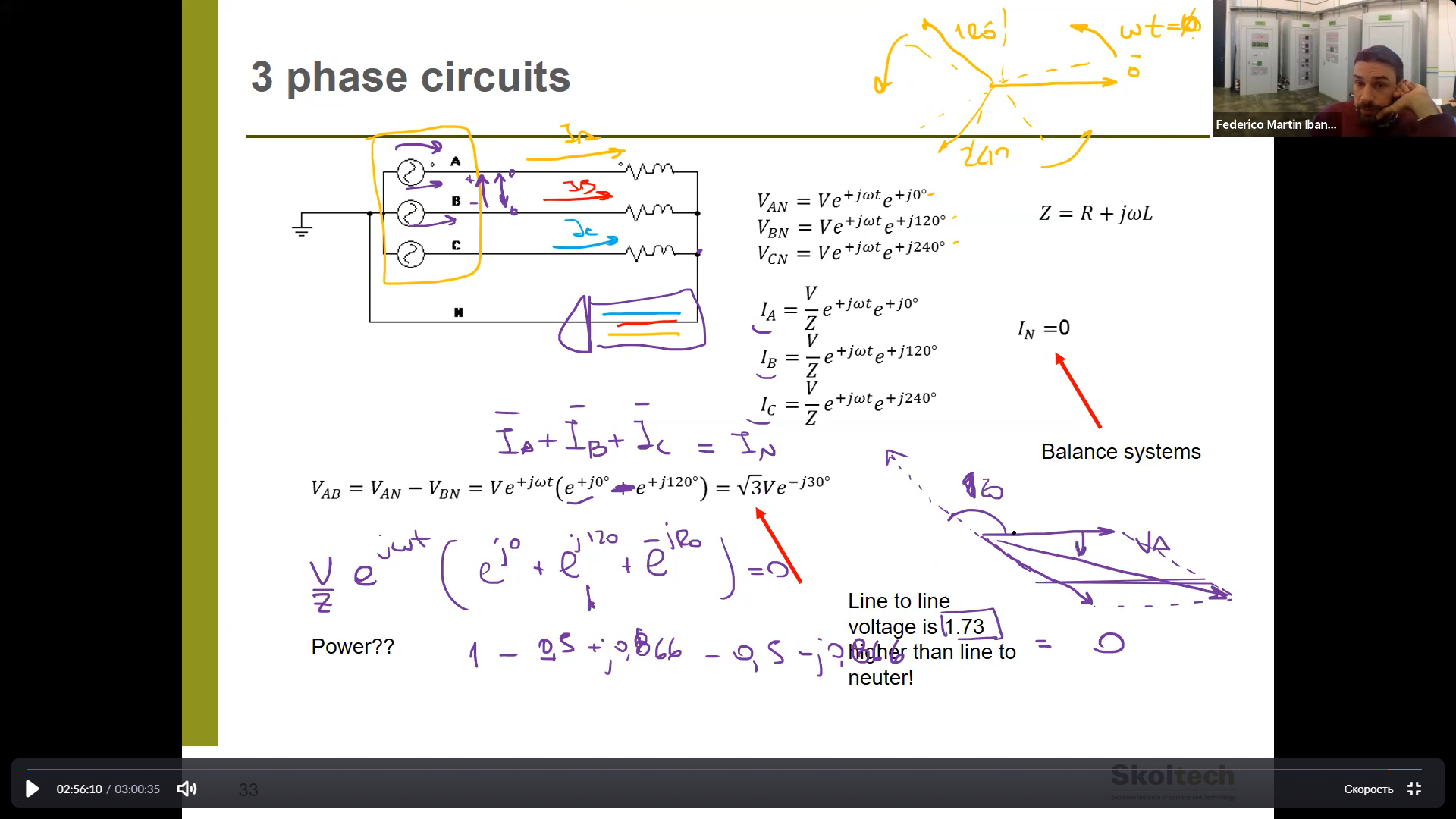
There are S (apparent power) consists of P (power), Q (reactive power)

PF – is the power factor.

For nonsinusoidal signal systems:

We extract the first harmonic and divide it by full power to define PF – power factor.

1. 3 phase circuits:



If we sum all currents from A, B,C sources we get 0. – it means that there is no current in N.

Also accidentally want to calculate voltage between AB it turns to larger voltage, with the shift.