**Singal and system**

**Lab 6**

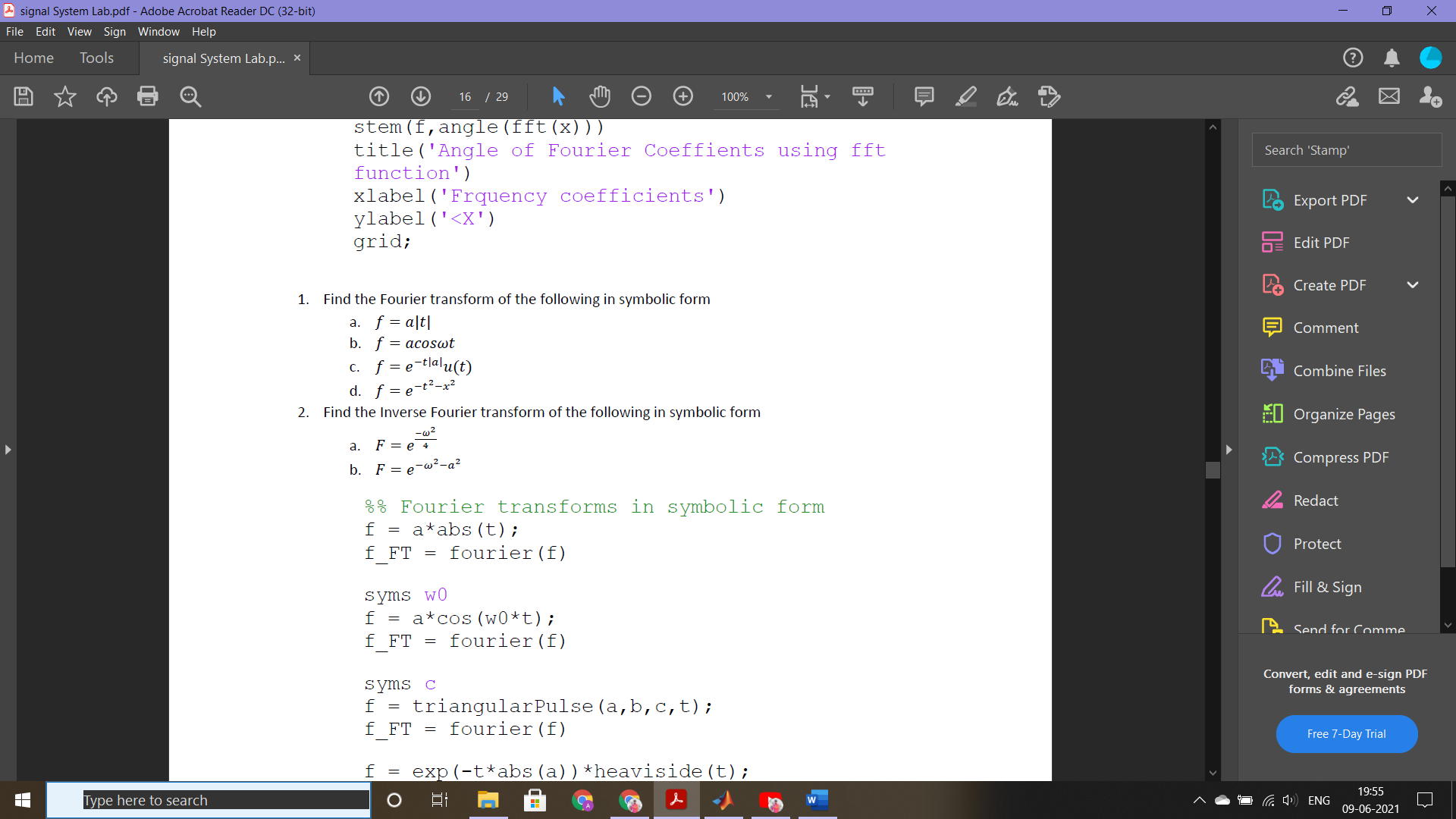
NAME:- Aniket Roy

ROLL NO:- 19CS8020

REG NO:- 19U10064

**1. Find the Fourier transform of the following in symbolic form**

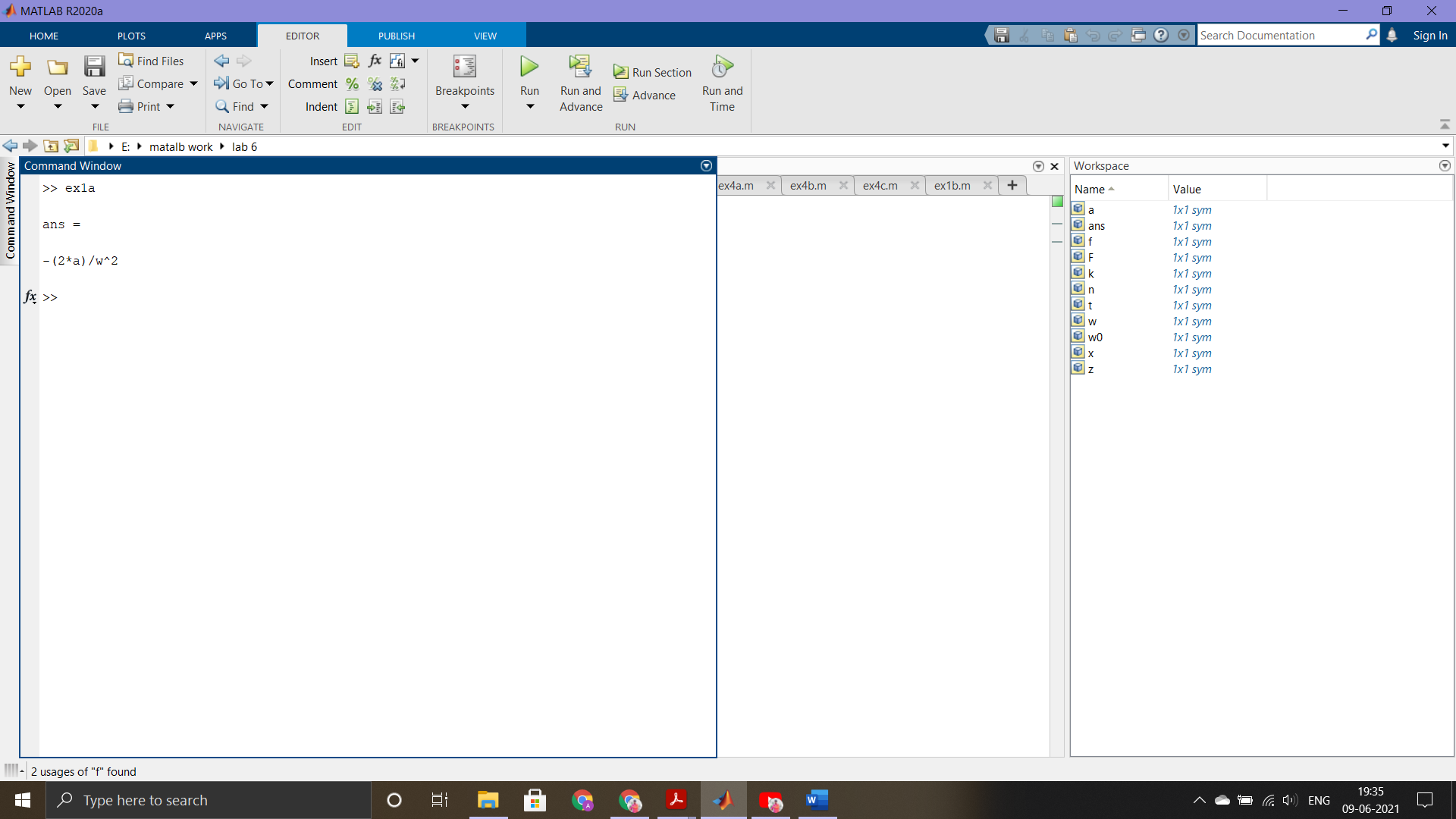
**a>**

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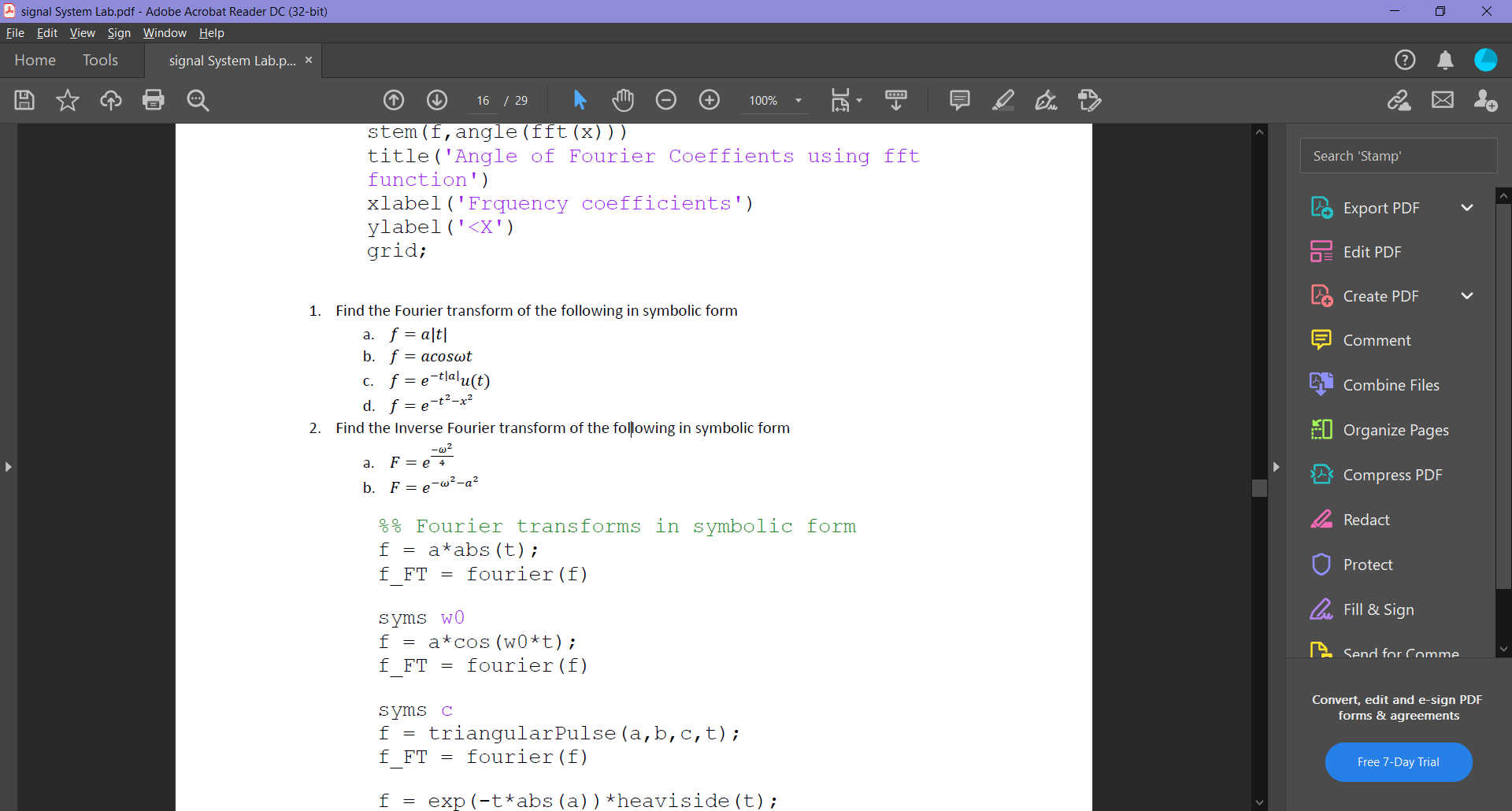
syms t

f = a\*abs(t);

fourier(f)

****

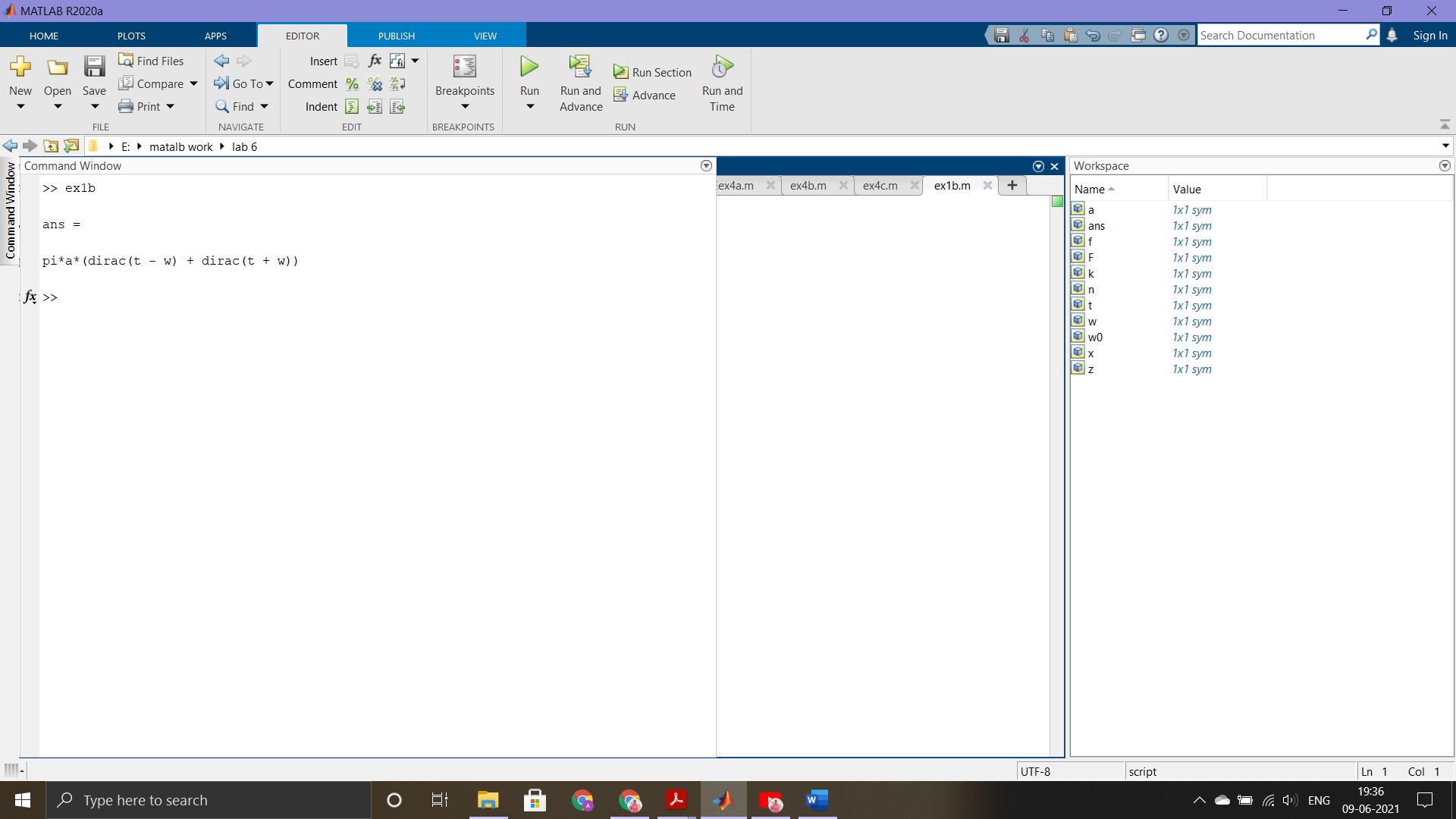
**b>**



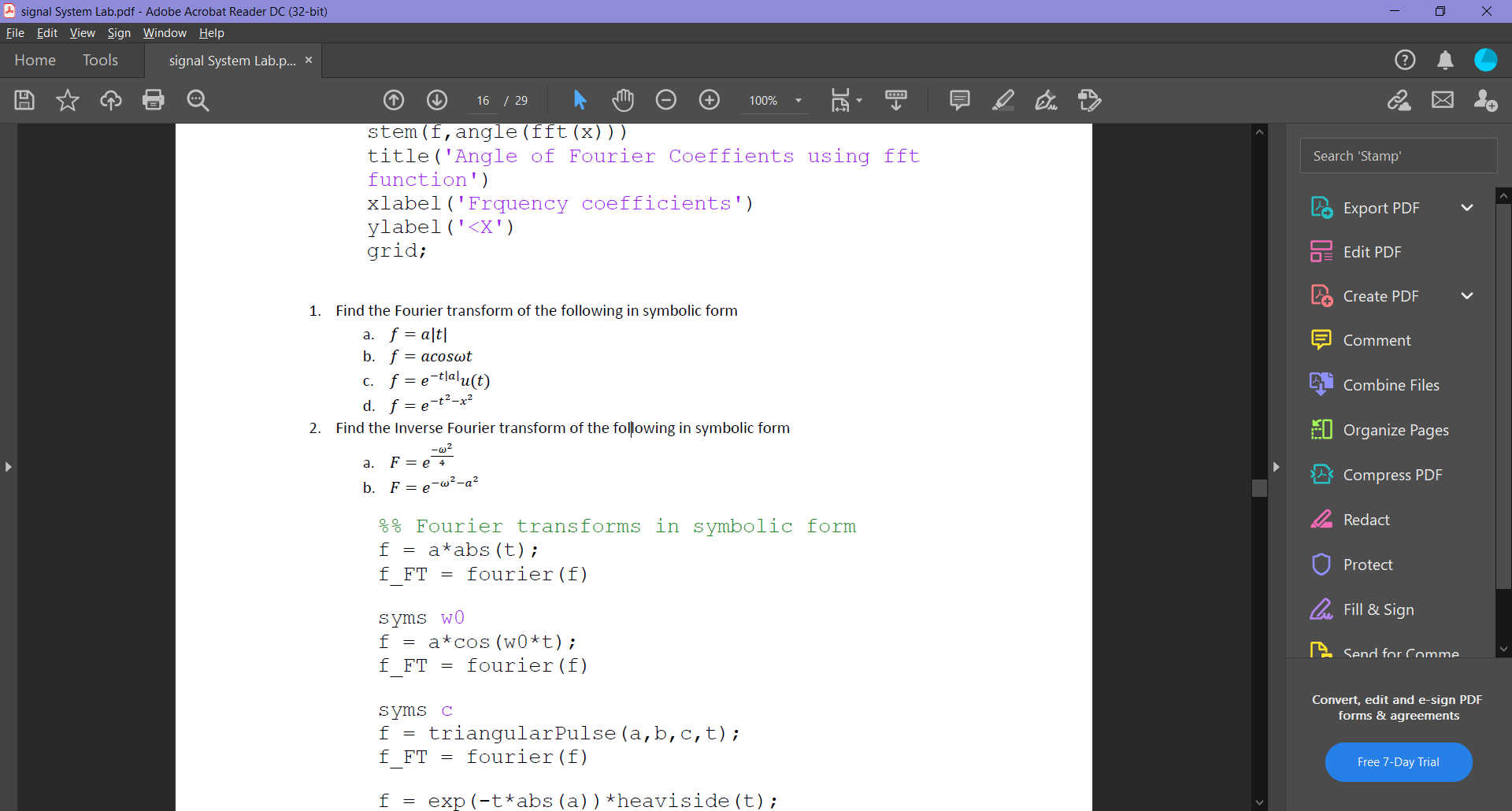
syms t

f = a\*cos(w0\*t);

fourier(f)

****

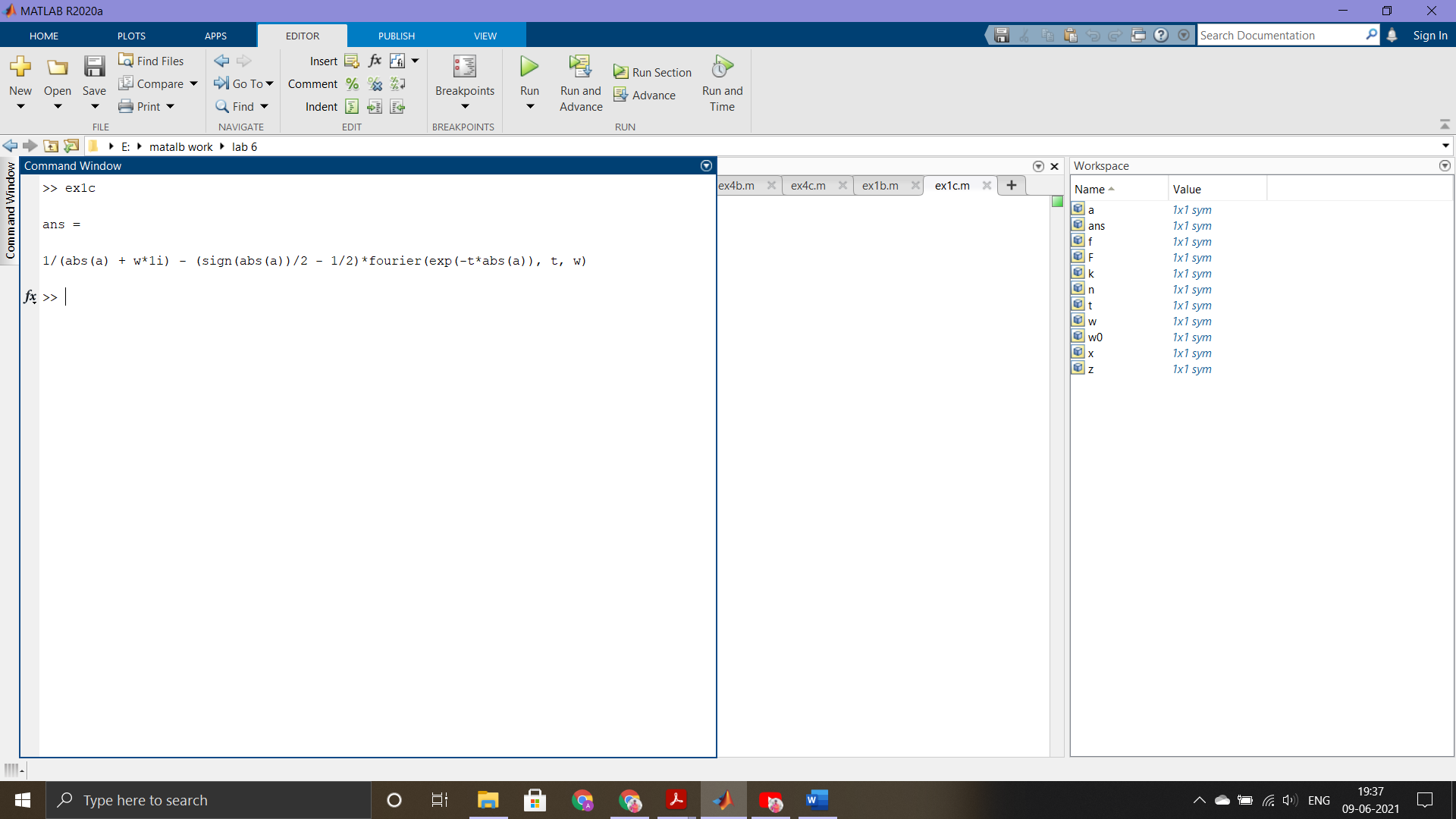
**c>**



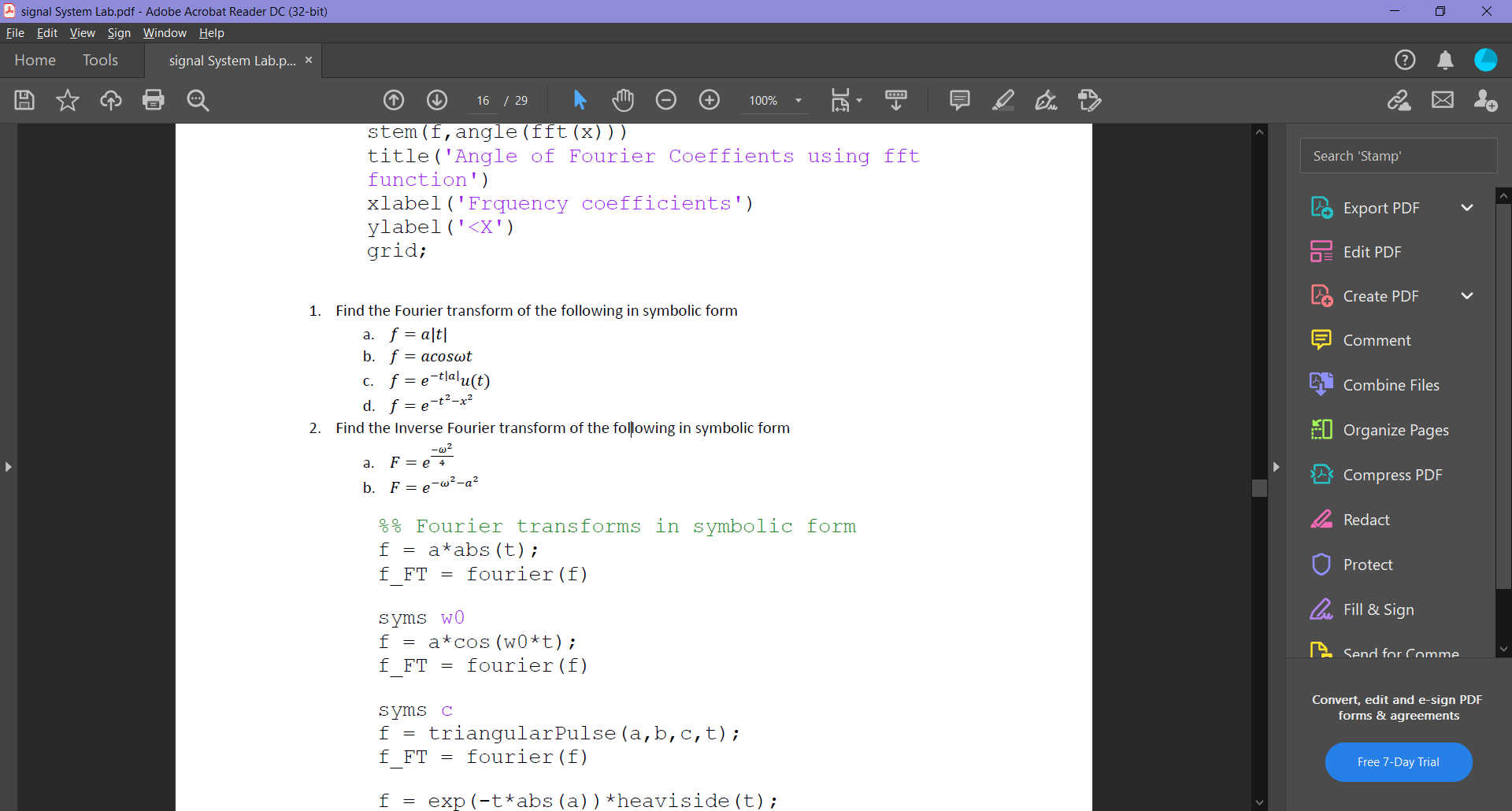
syms t

f = exp(-t\*abs(a))\*heaviside(t);

fourier(f)

****

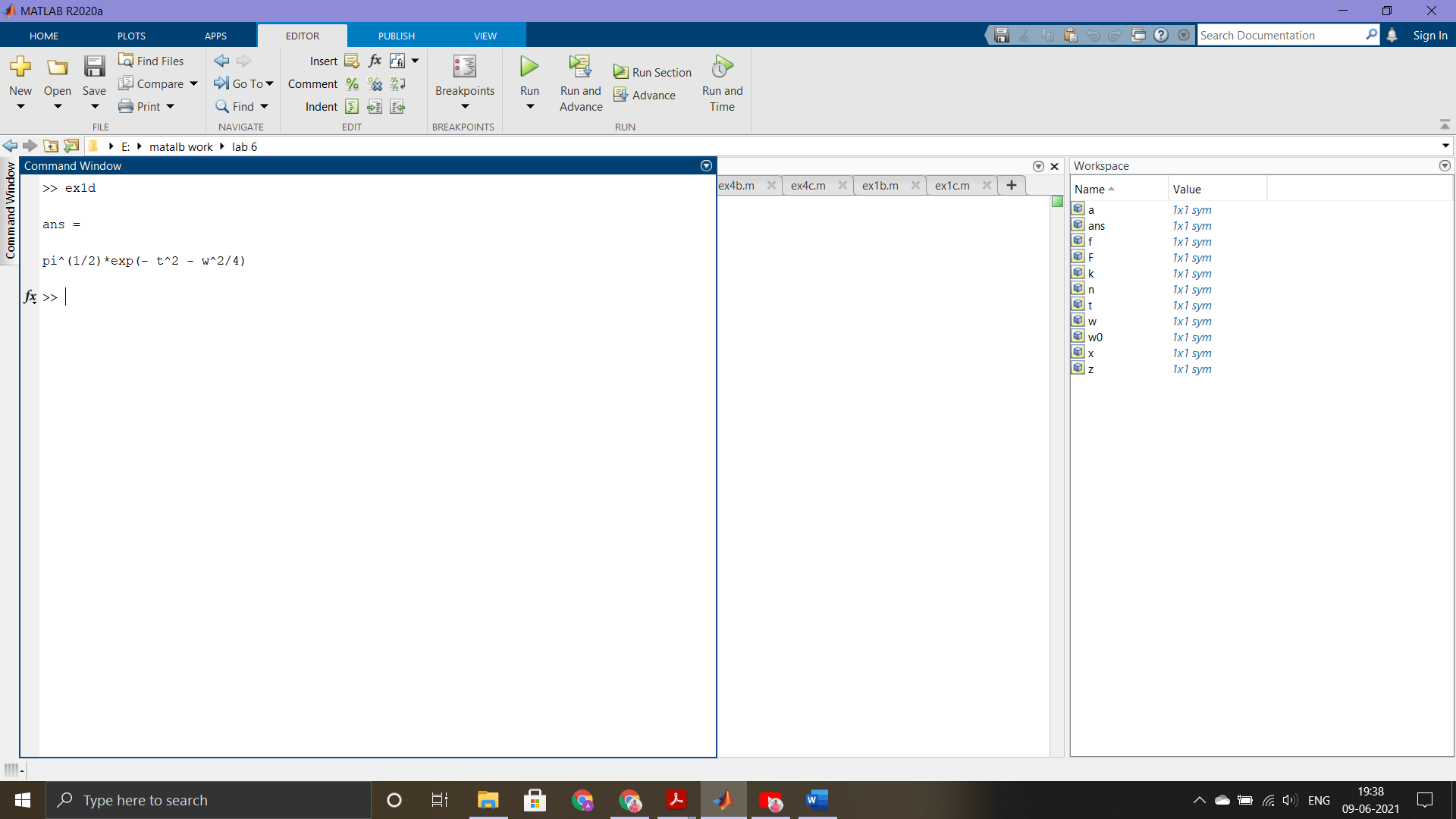
**d>**



syms t x

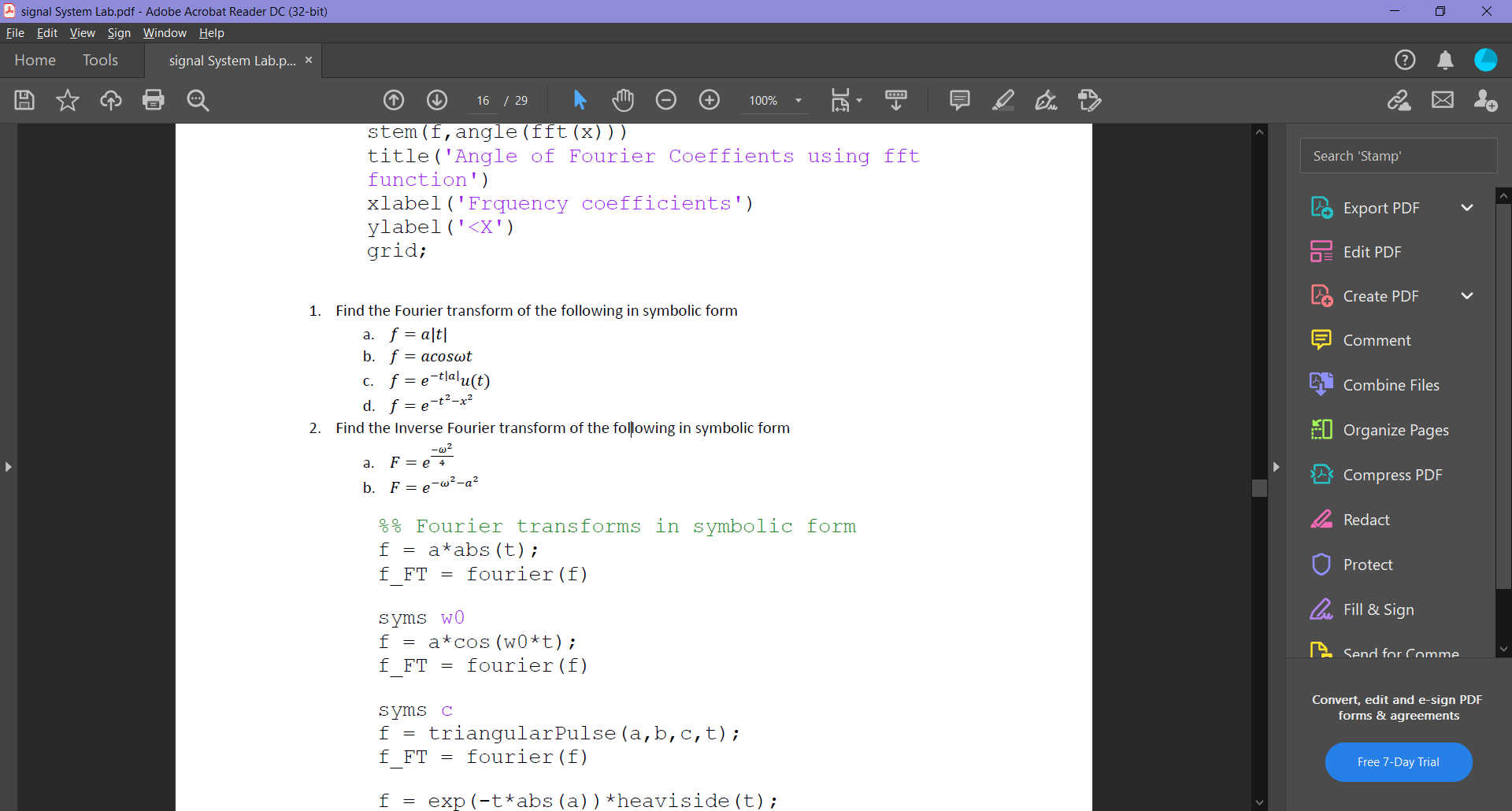
f = exp(-t^2-x^2);

fourier(f)

****

**2. Find the Inverse Fourier transform of the following in symbolic form**

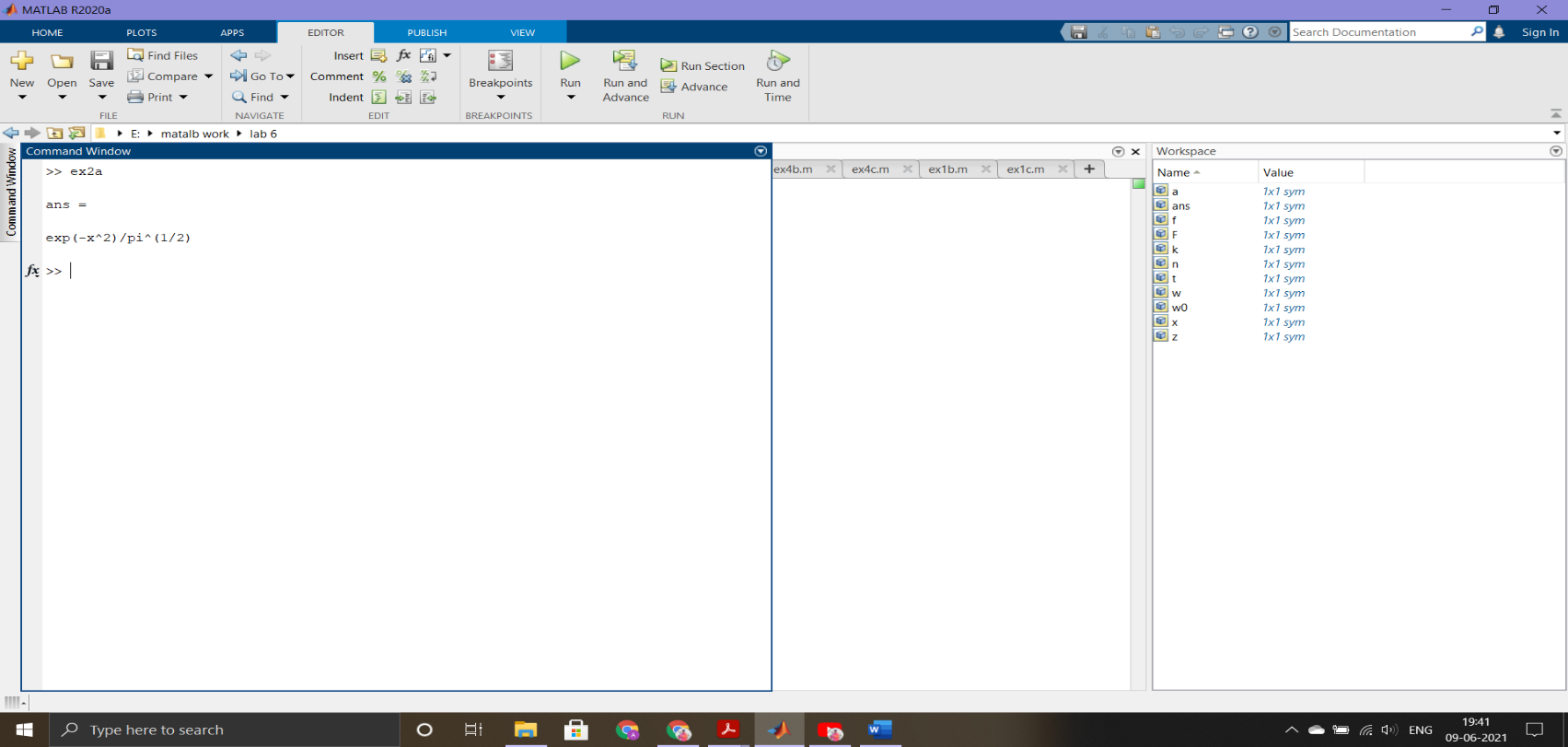
**a>**



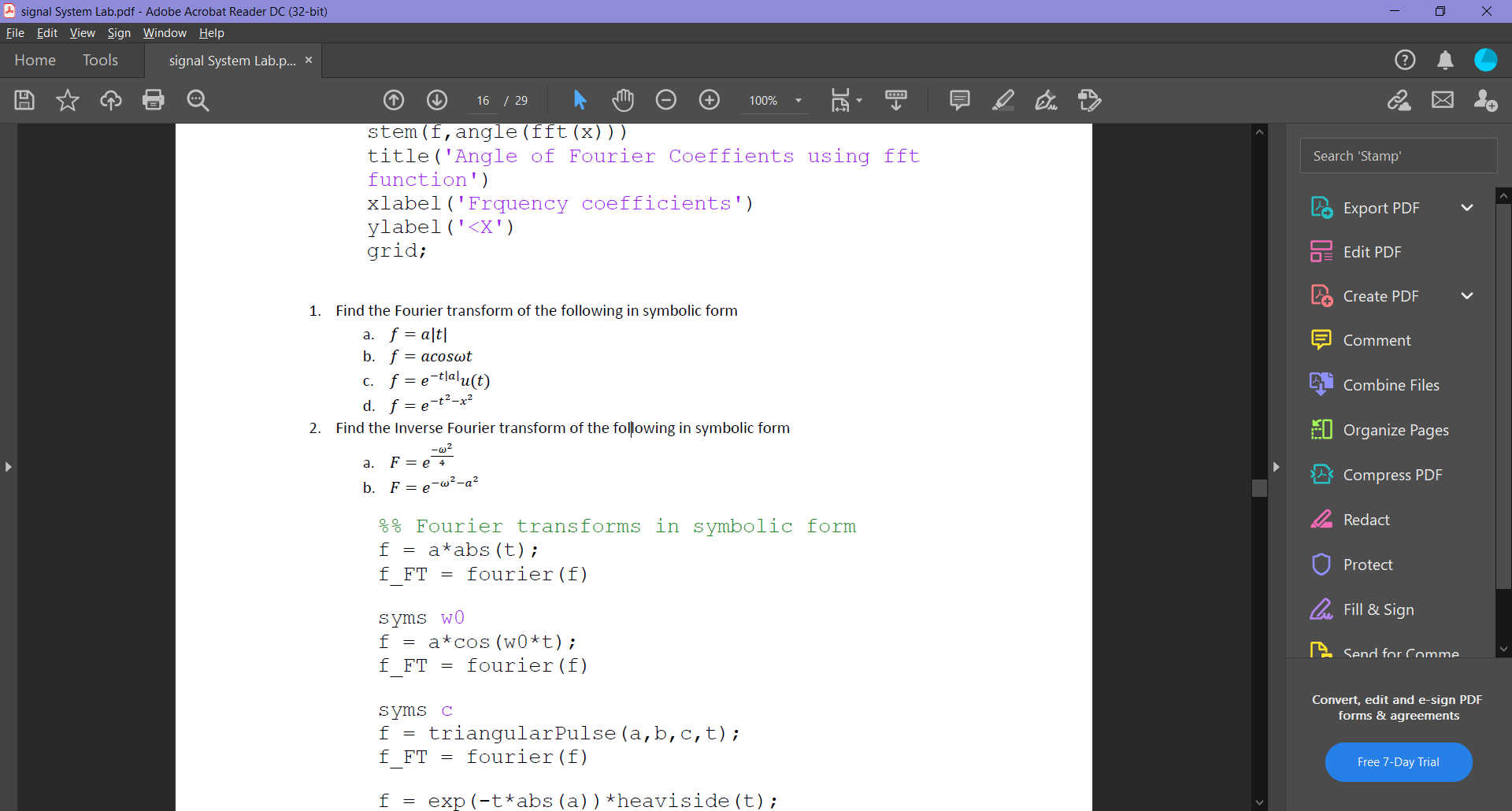
syms w

F = exp(-w^2/4);

ifourier(F)

****

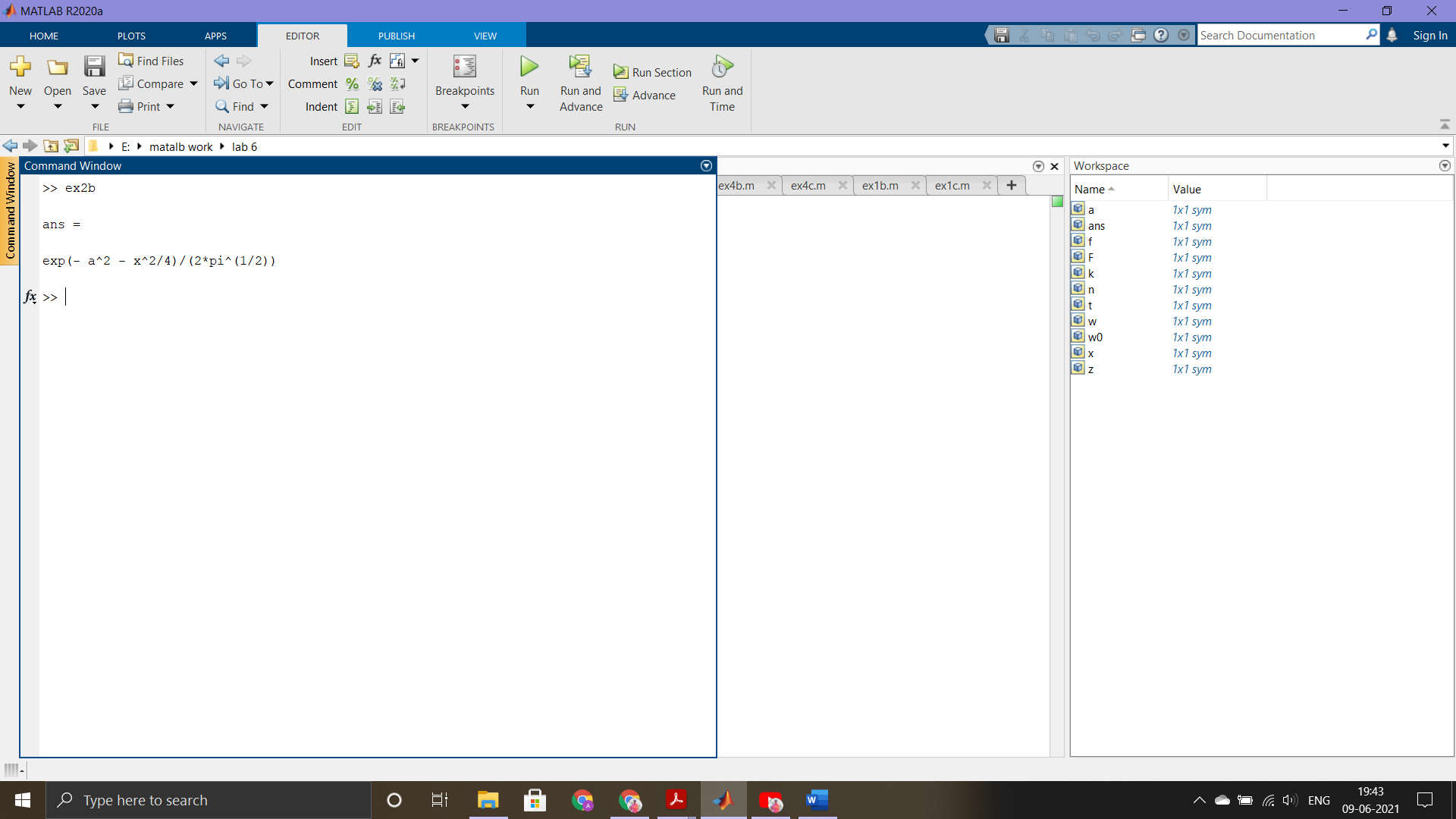
**b>**



syms a w t

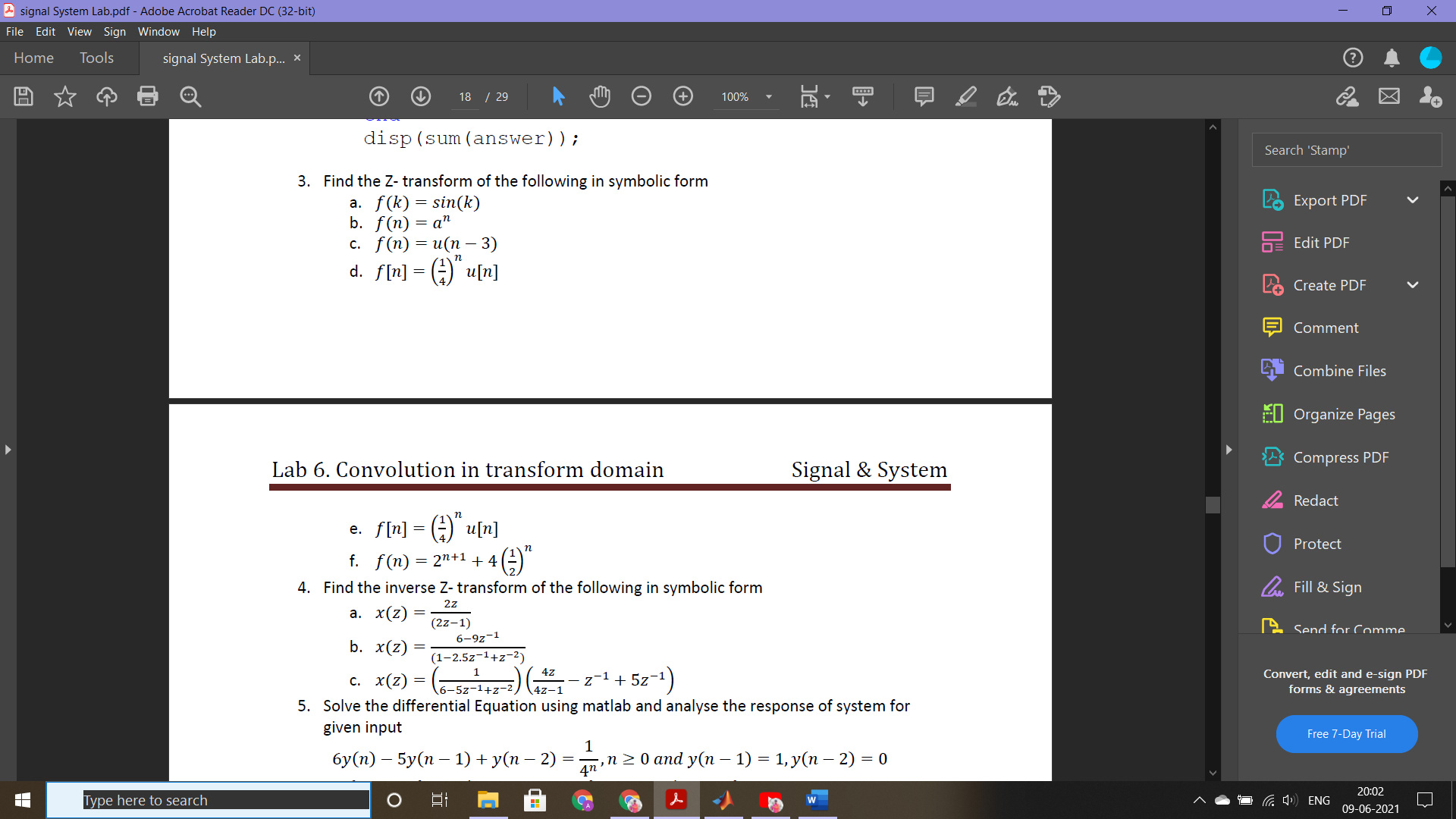
F = exp(-w^2-a^2);

ifourier(F)

****

**3. Find the Z- transform of the following in symbolic form**

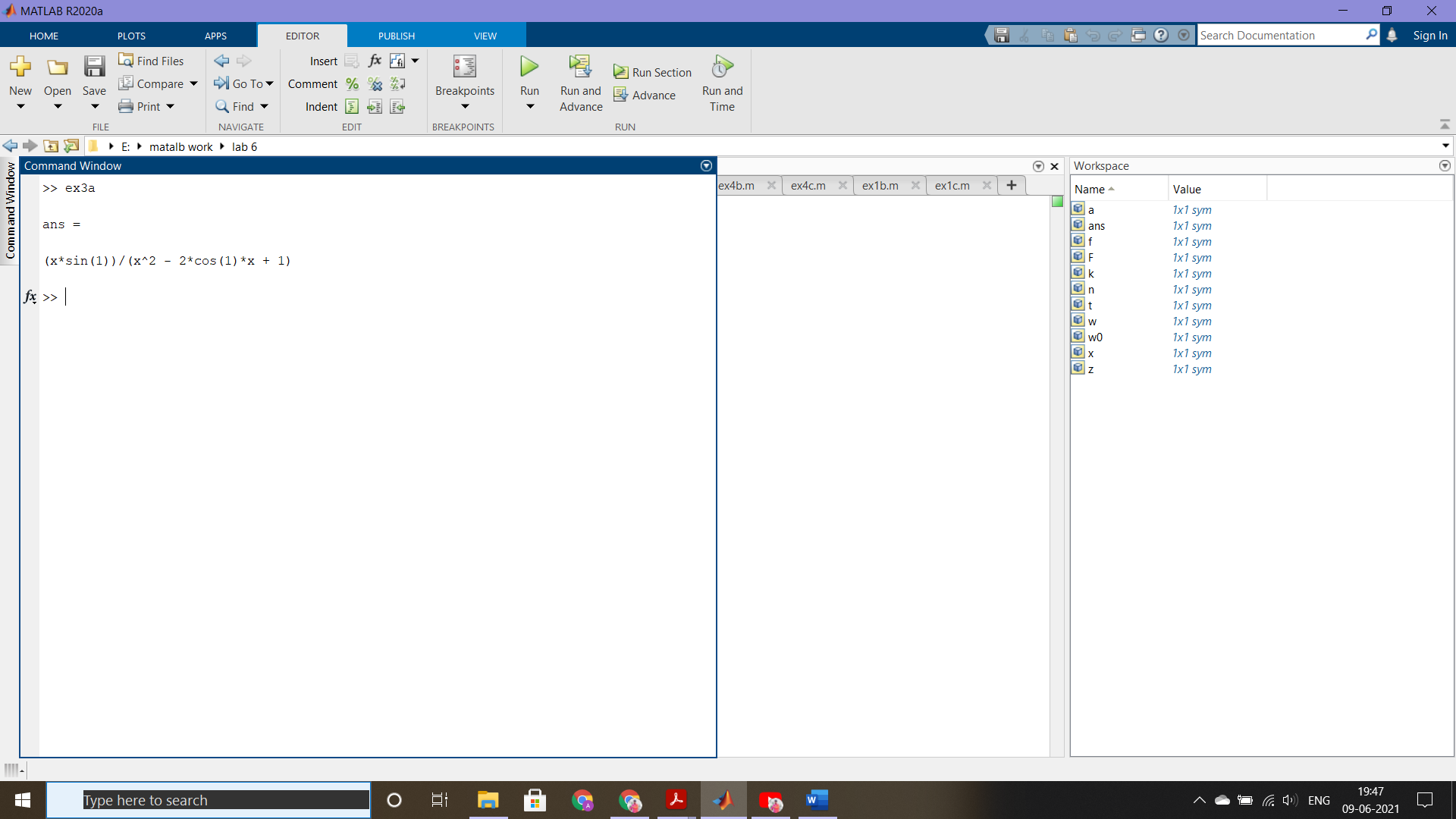
**a>**



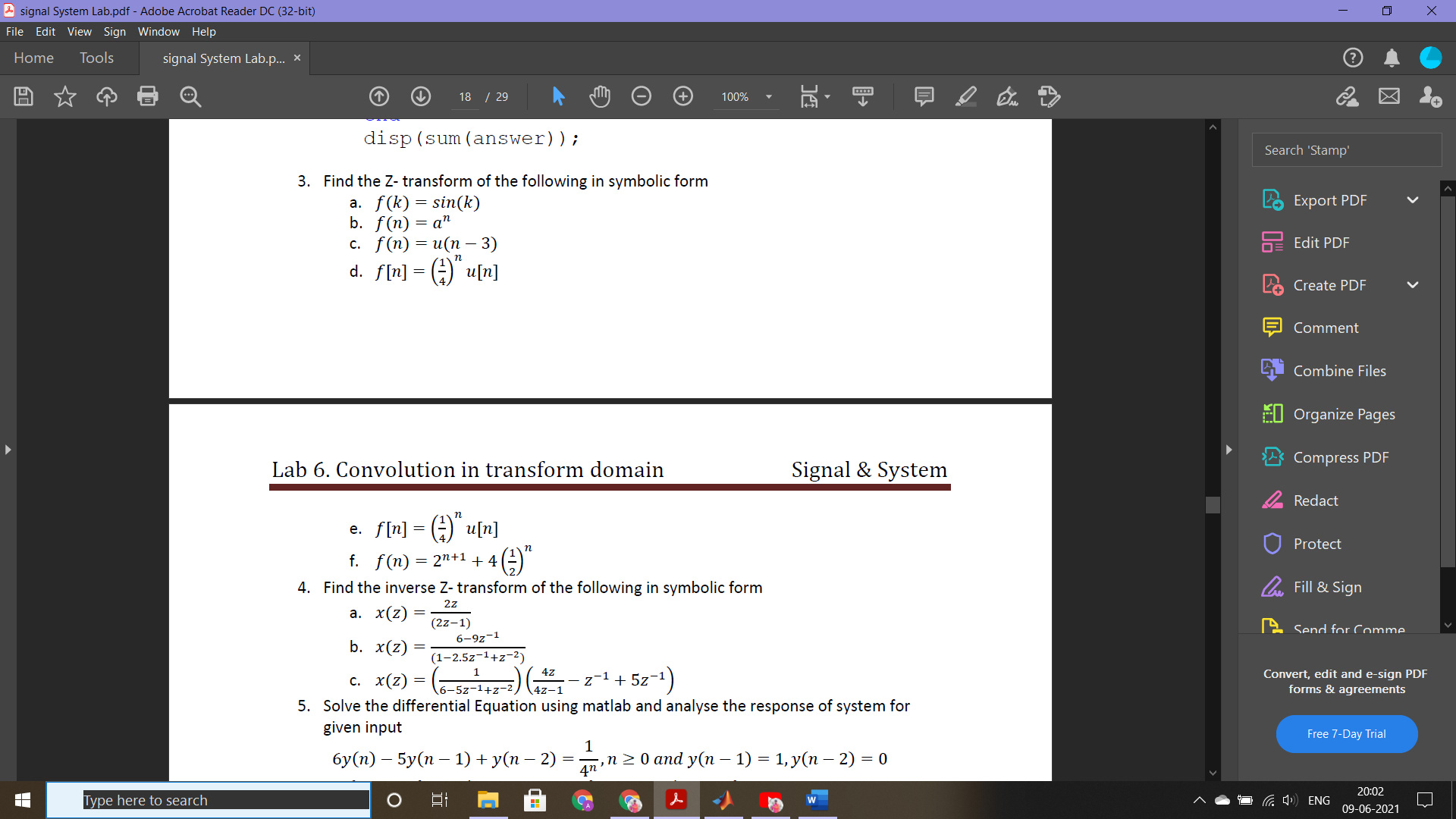
syms k x

f = sin(k);

ztrans(f, k, x)



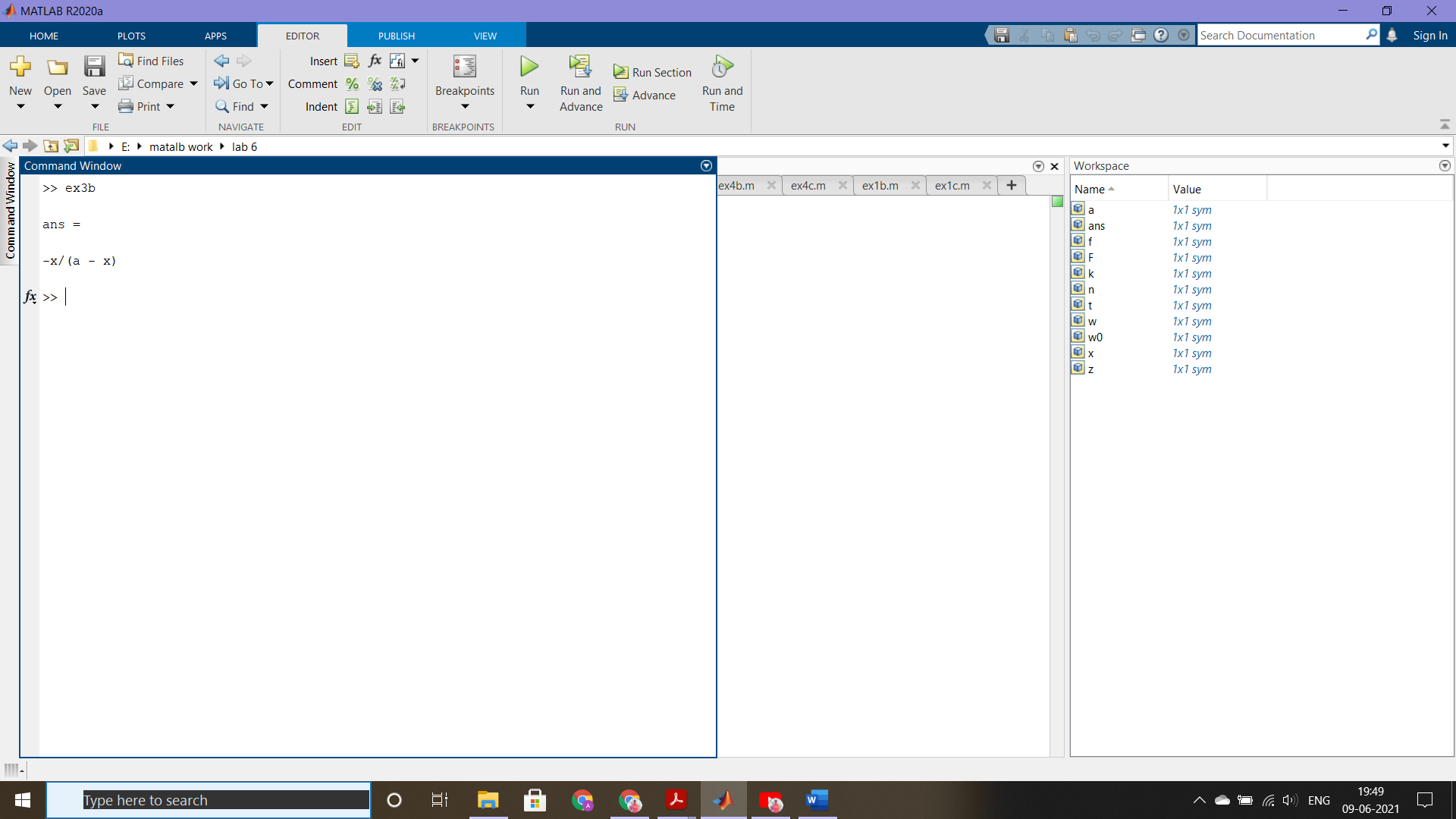
**b>**



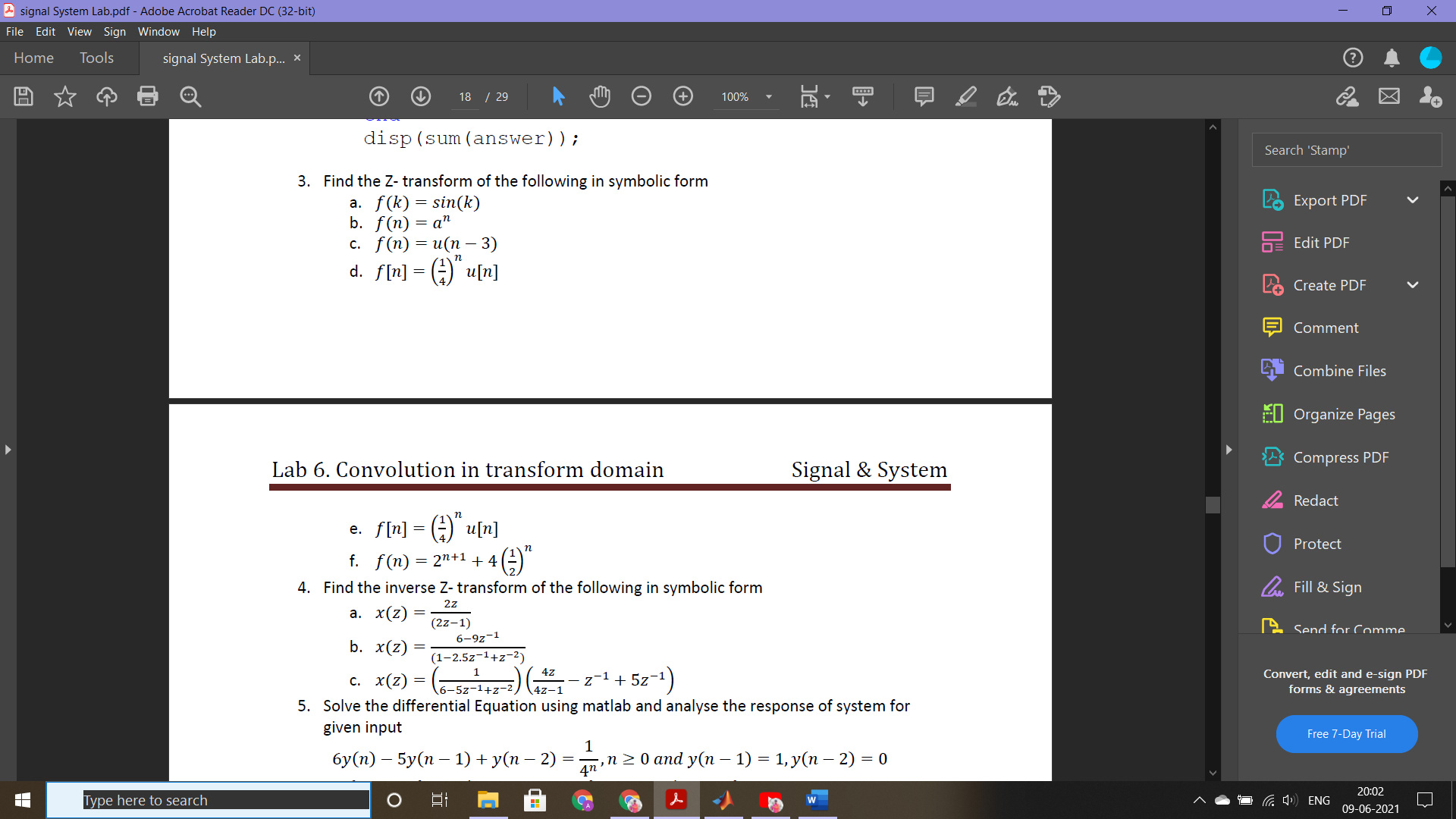
syms a n x

f = a^n;

ztrans(f, x)

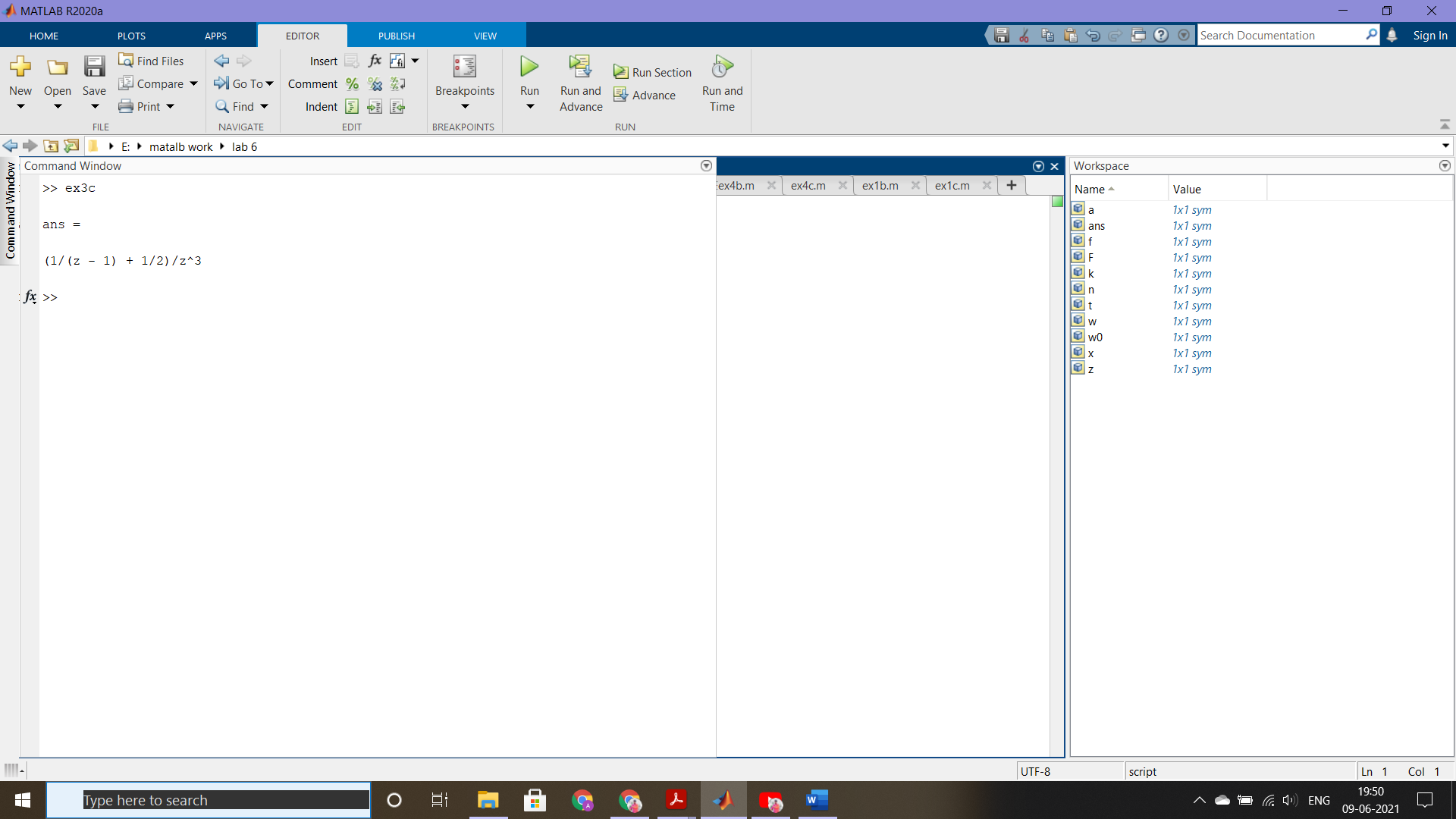
****

**c>**

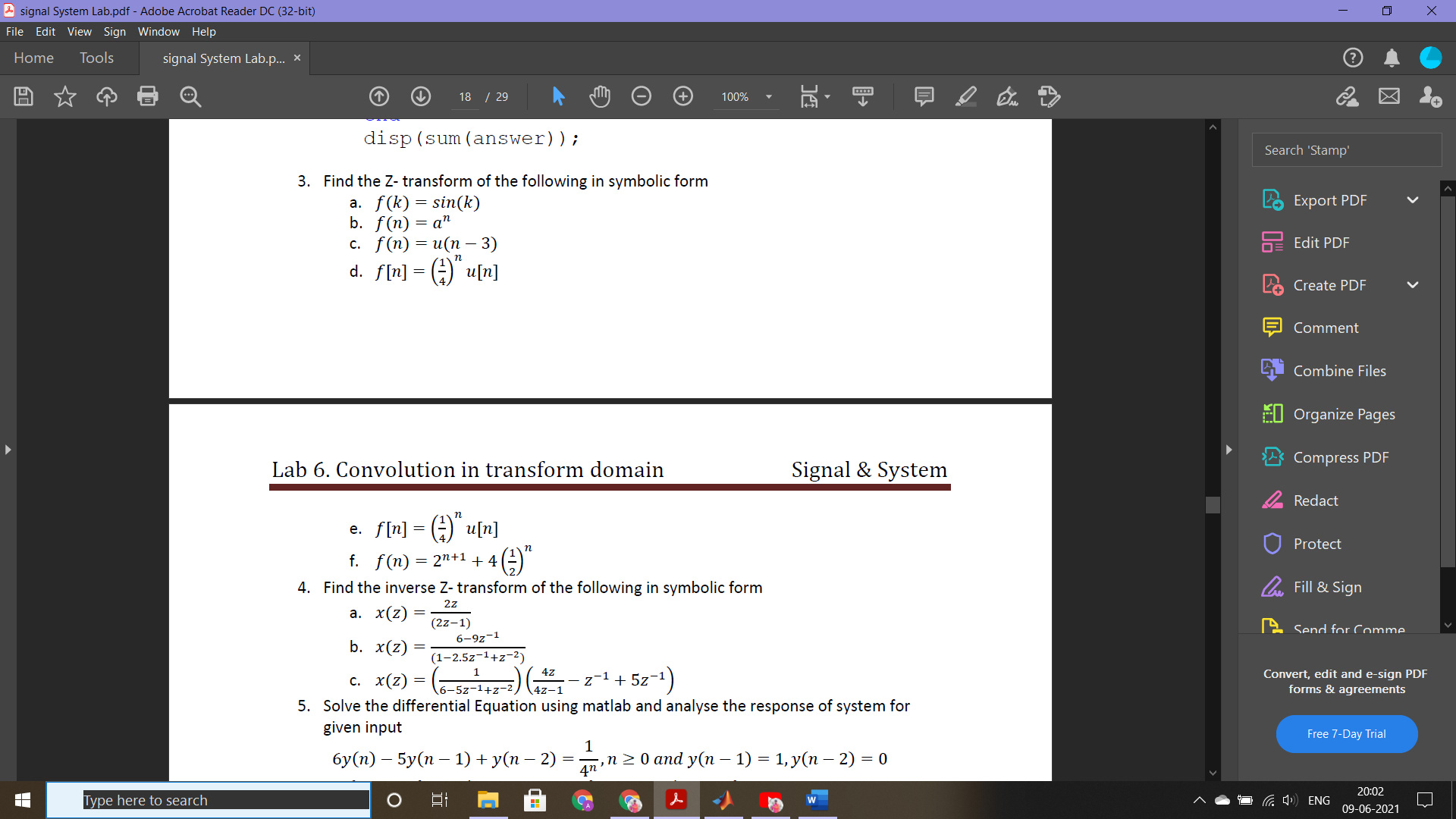


syms n z

ztrans(heaviside(n - 3), n, z)

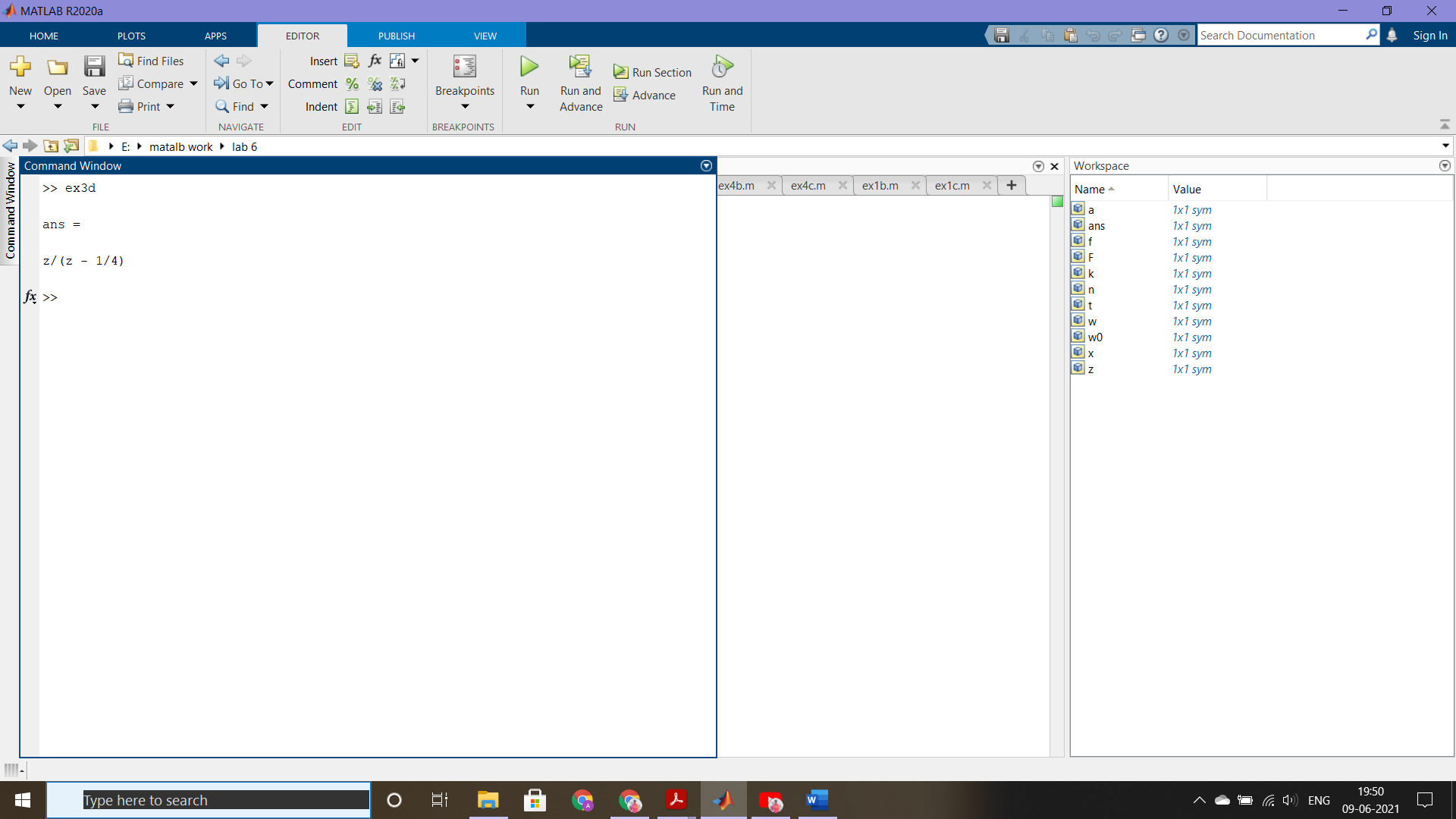
****

**d>**

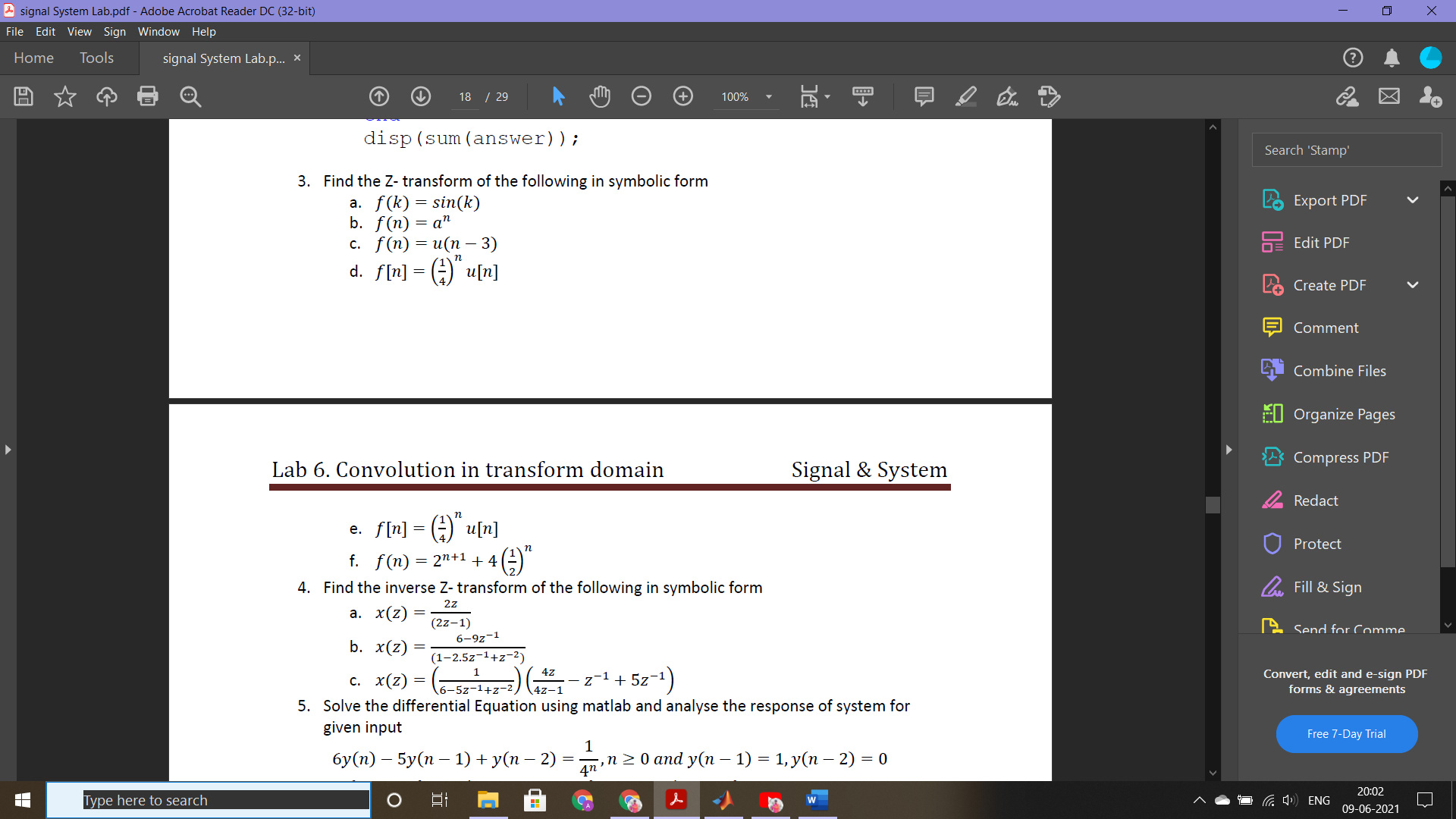


syms z n;

ztrans(1/4^n)

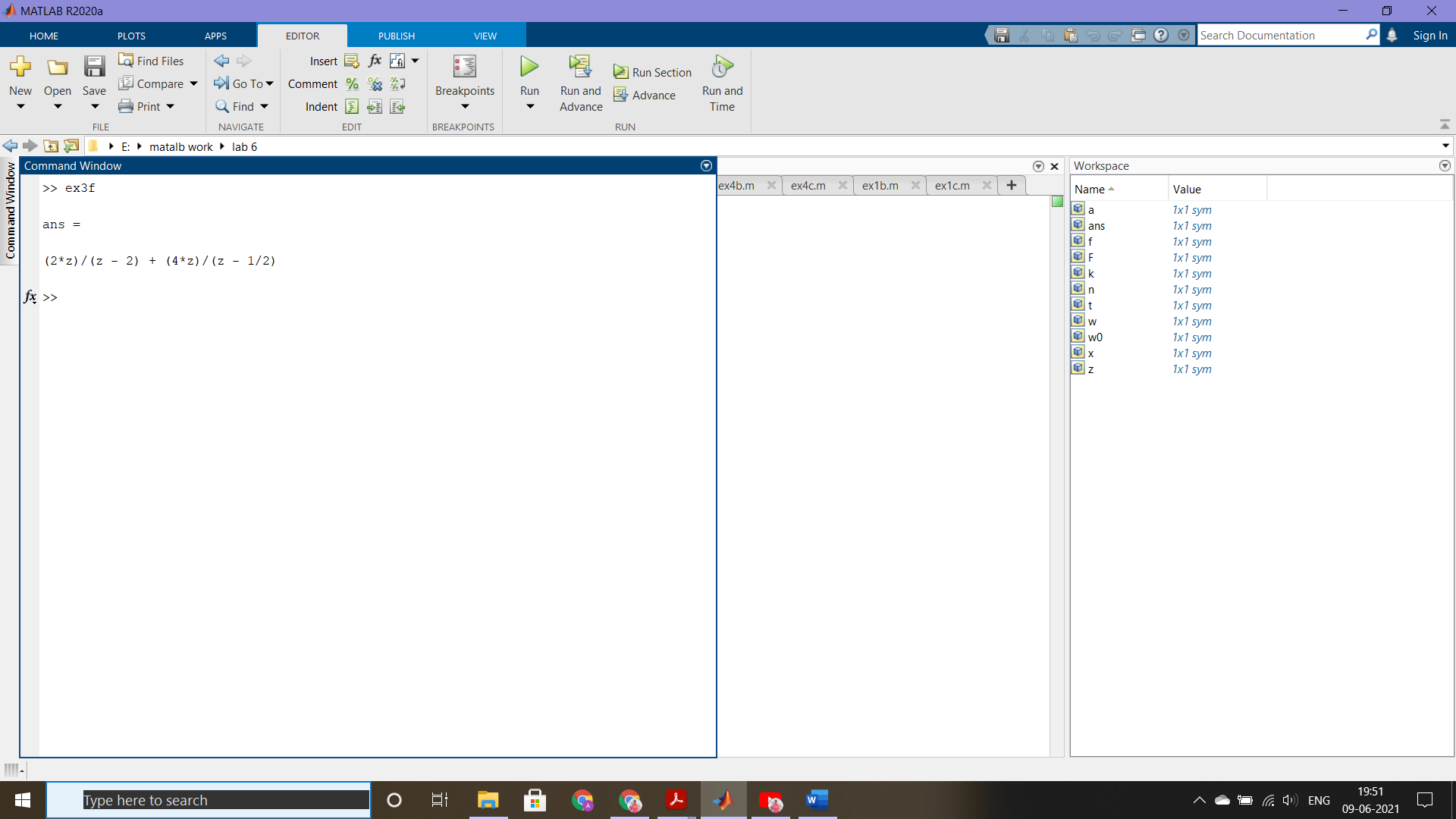
****

**f>**



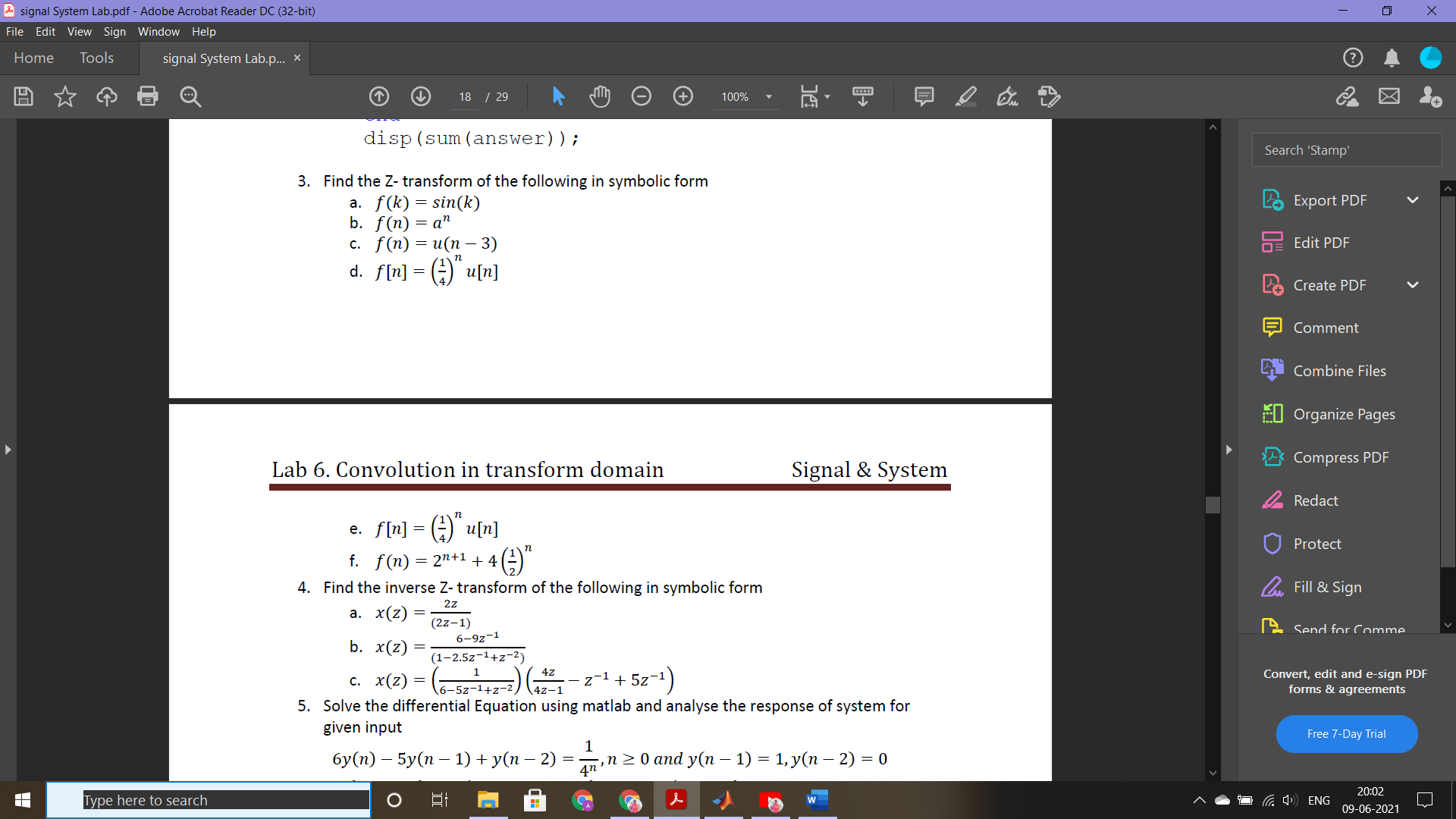
syms z n

ztrans(2\*2^n+4\*(1/2)^n)

****

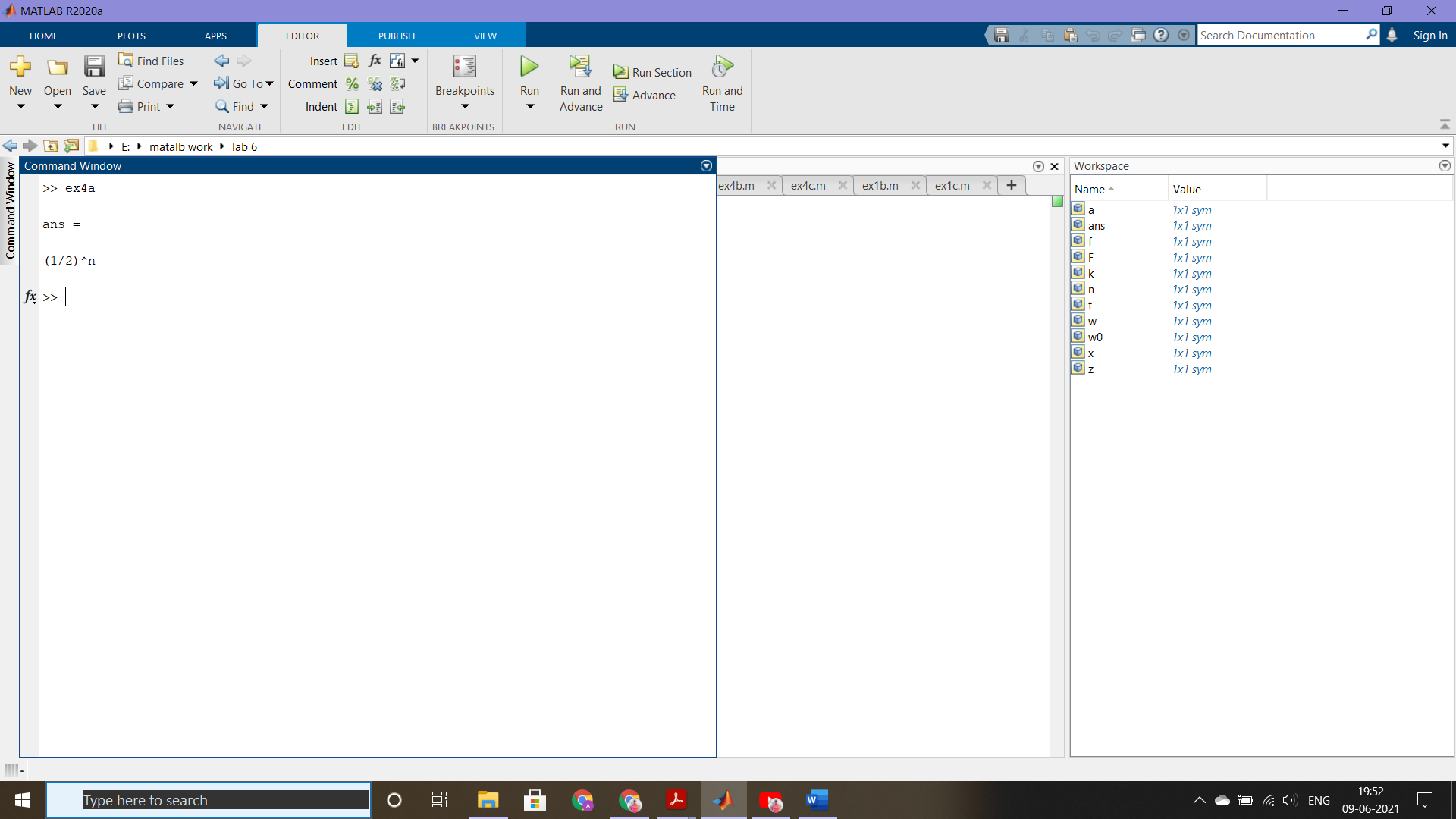
**4. Find the inverse Z- transform of the following in symbolic form**

**a>**

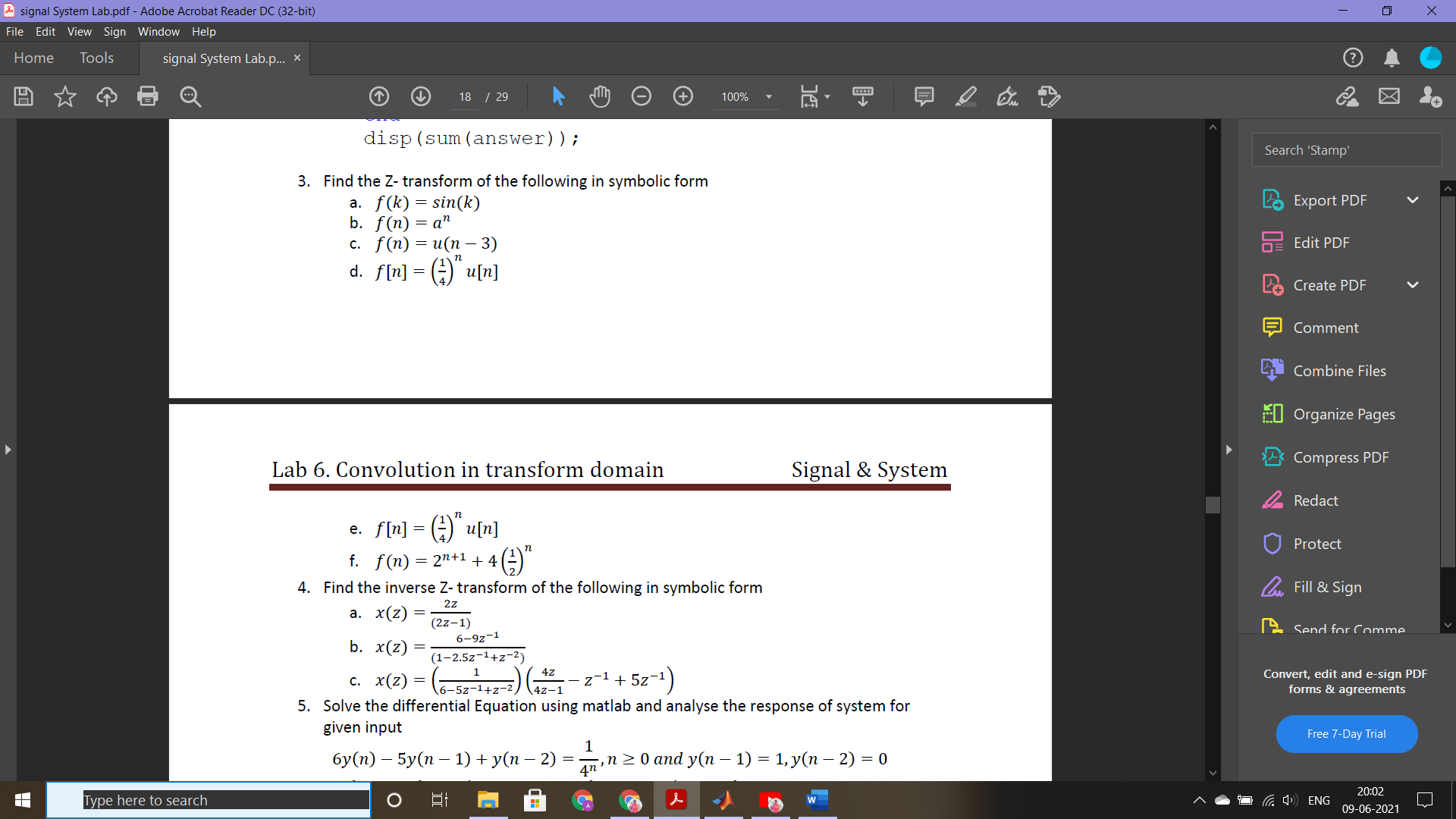


syms z n;

iztrans(2\*z/(2\*z-1))

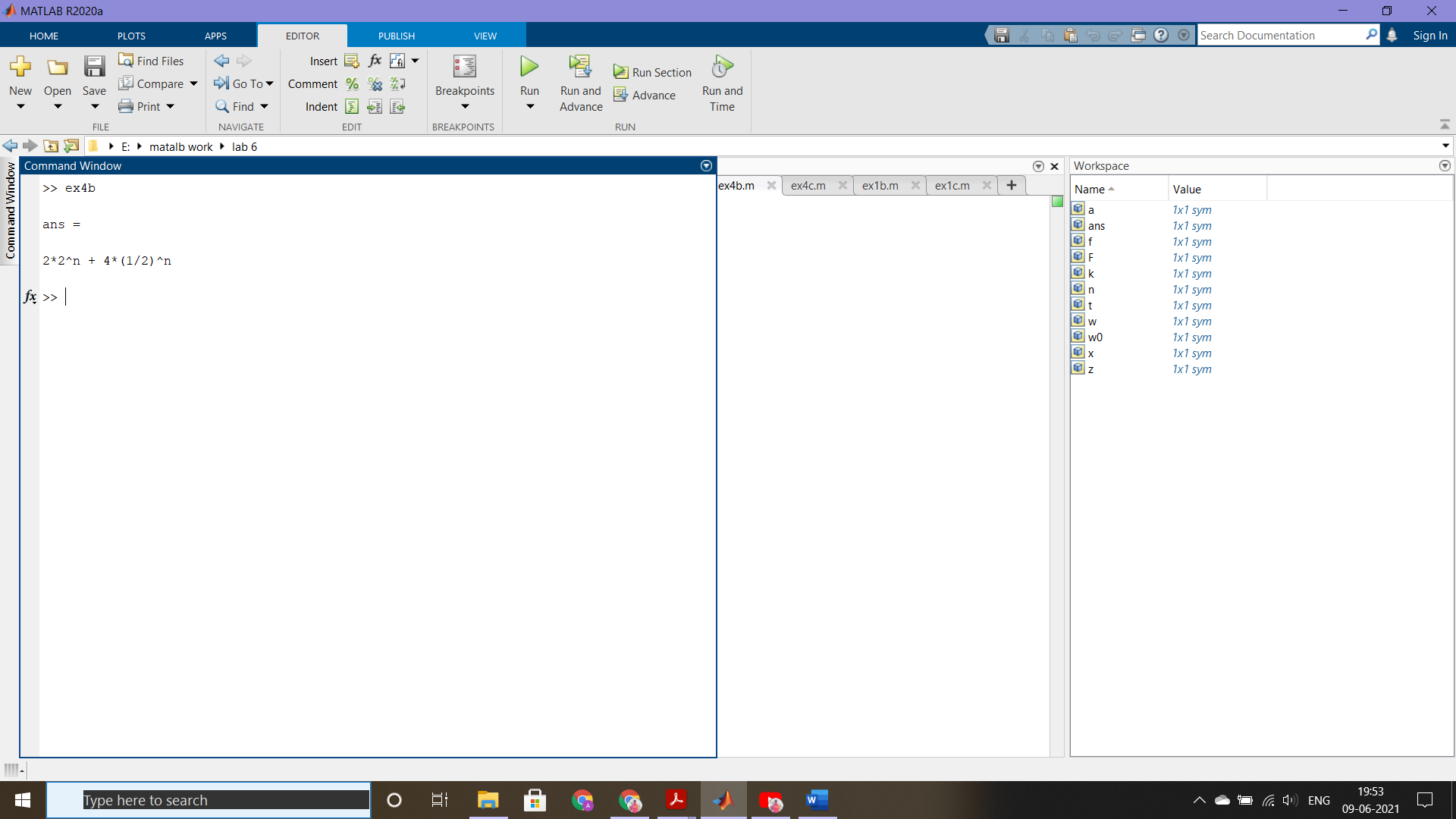
****

**b>**

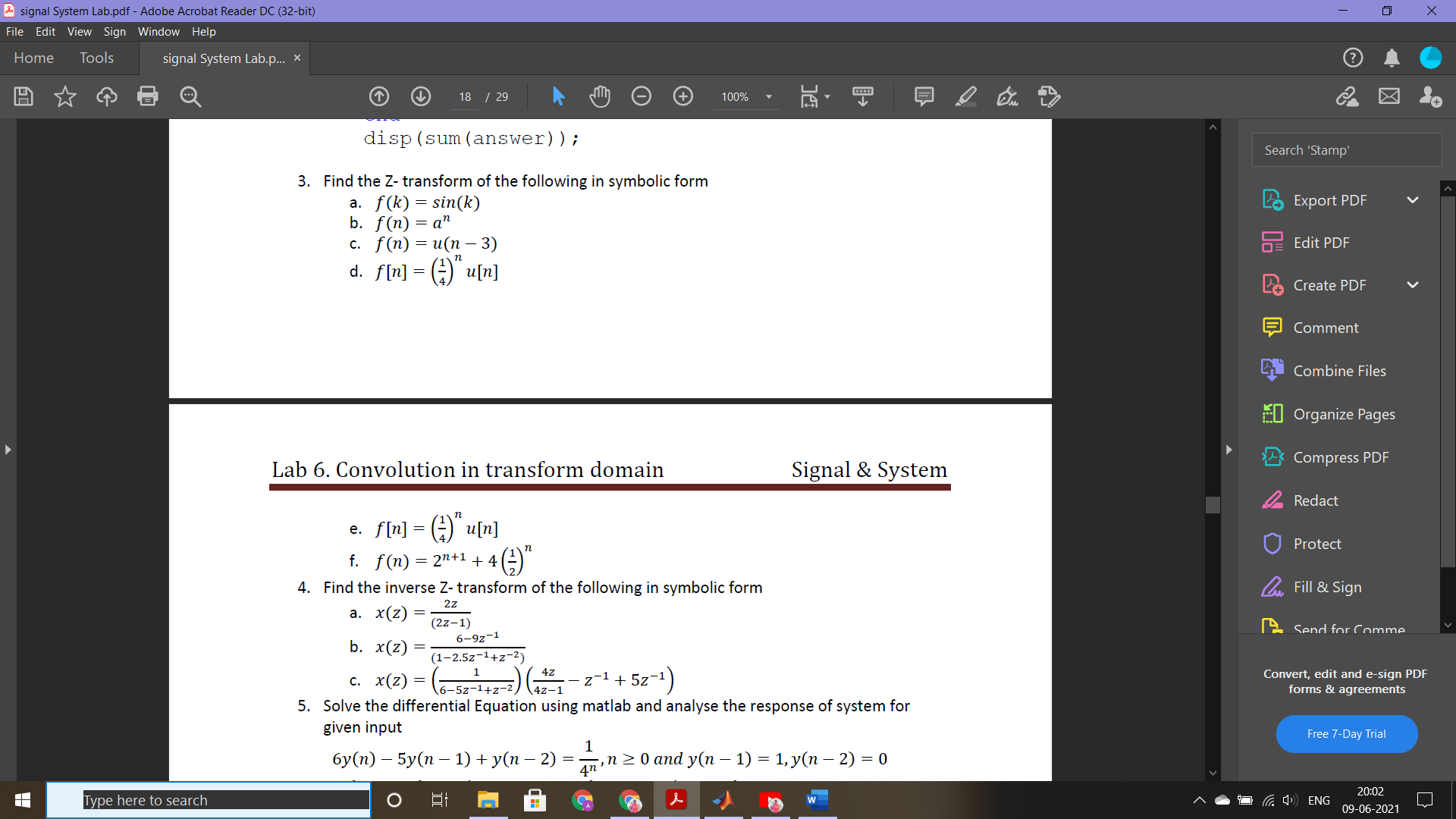
****

syms z n;

iztrans((6-9\*z^-1)/(1-2.5\*z^-1+z^-2))



**c>**

****

syms z n;

iztrans((1/(6-5\*z^-1+z^-2))\*((4\*z/(4\*z-1))-z^-1+5\*z^-1))

