NATIONAL INSTITUTE OF TECHNOLOGY SURATHKAL

MANGALORE, KARNATAKA-575025

LAB ASSIGNMENT :-07

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ROLL NO :- 211IT017

COURSE :- B.TECH (INFORMATION TECHNOLOGY)

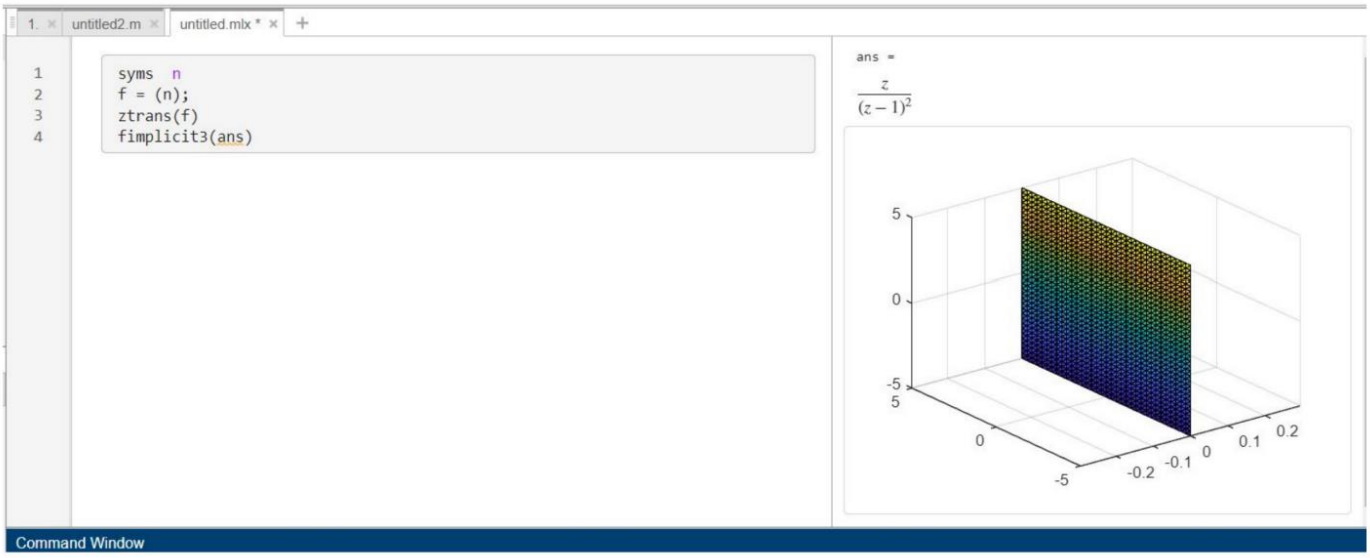
SUBJECT :- IT204 (SIGNALS AND SYSTEM LAB)

SUBMITTED TO :-

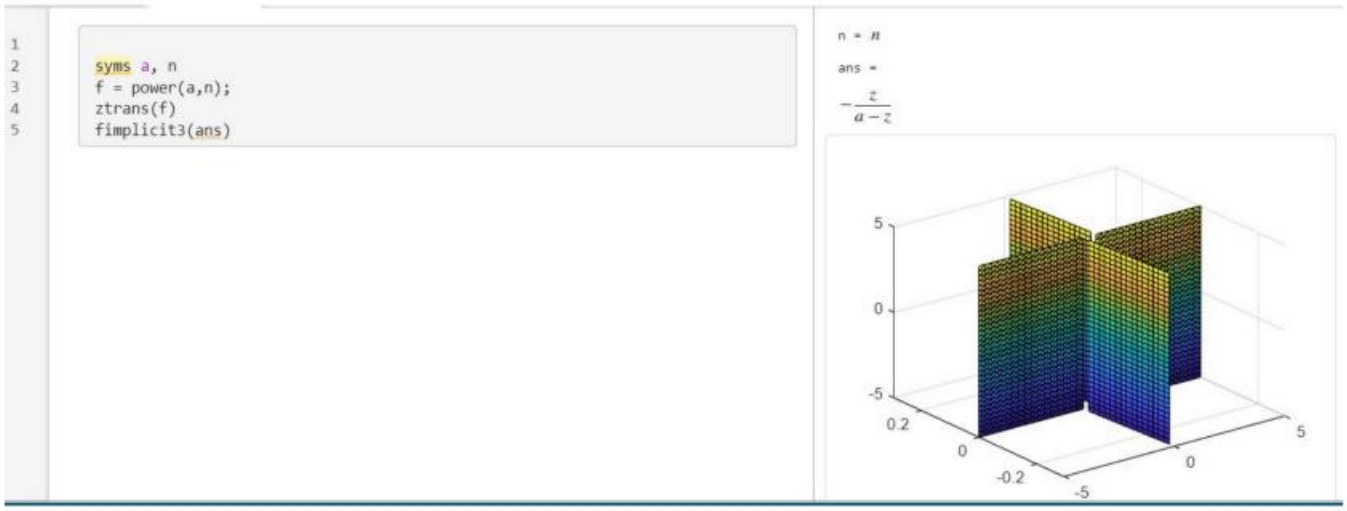
- REVANESH M

A MATLAB/ Python program to find one sided z-transform of the following standard causal signals.

A)n



B) a^n



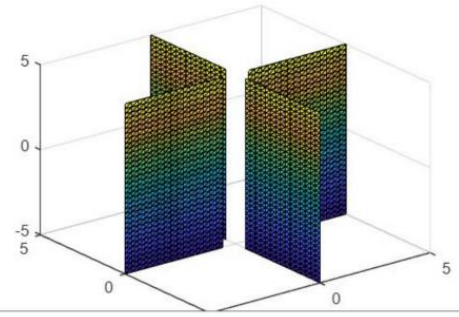
C)na^n

```
syms a, n
f = n * (power(a,n));
ztrans(f)
fimplicit3(ans)
```

$n = n$

ans =

$$\frac{a\,z}{(a-z)^2}$$

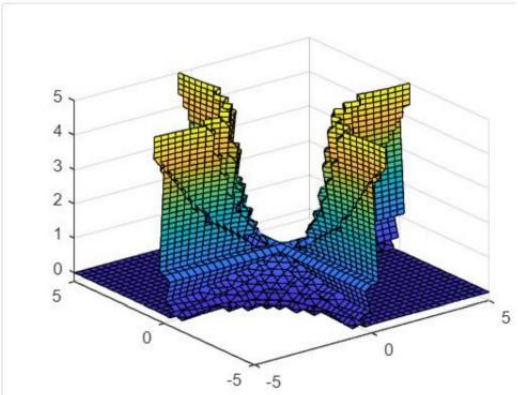


D)e^{-anT}

```
syms a,n
syms T
f=exp(-1*a*n*T)
ztrans(f)
fimplicit3(ans)
```

ans =

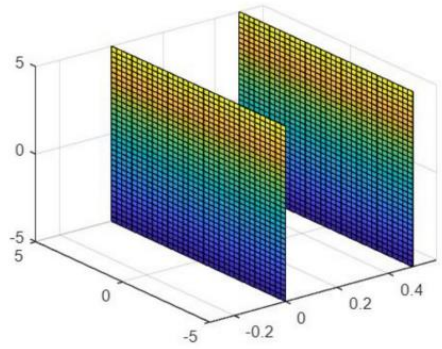
$$\frac{z}{z-e^{-Ta}}$$



A MATLAB/ Python program to find z-transform of the following standard causal signals.

A)0.5^n

```
syms n
f=power(0.5,n)
ztrans(f)
fimplicit3(ans)
```



ans =

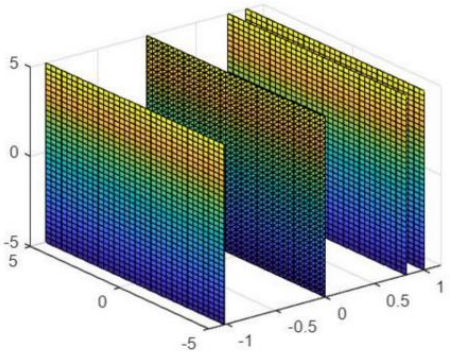
$$\frac{z}{z-\frac{1}{2}}$$

B) $1+n(0.4)^{(n-1)}$

```
syms n
f= 1 + (n*power(0.4,n-1))
ztrans(f)
fimplicit3(ans)
```

ans =

$$\frac{z}{z-1}+\frac{25\,z}{(5\,z-2)^2}$$



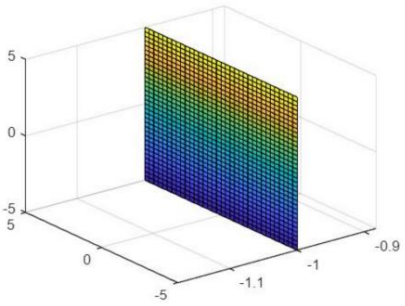
A MATLAB/ Python program to find inverse z-transform of the following z-domain signals.

A) $1/ (1 - 1.5z^{-1}+ 0.5z^{-2})$

```
syms z
f=1/(1 - (1.5*power(z,-1)) + (0.5*power(z,-2)))
iztrans(f)
fimplicit3(ans)
```

ans =

$$2-\left(\frac{1}{2}\right)^{n}$$



B) $1/((1 + z^{-1}) + (1 – z^{-1})^{2})$

```
syms z
f=1/((1 + power(z,-1)) +power(1 -power(z,-1), 2 ))
iztrans(f)
fimplicit3(ans)
```

$$\sigma_1 = \frac{\sqrt{7}\,i}{2}$$