VIT UNIVERSITY

APPLICATIONS OF DIFFERENTIAL EQUATIONS

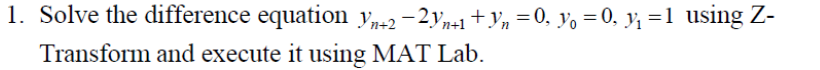
MAT2002

experiment-9

Faculty: Dr. Mellacheruvu Naga Srinivasu slot:L49+L50 venue:SJT319

**NAME: KARANI JASWANTH REG.NO:16BIT0058**

**DATE:22/03/2018**



**CODE:**

clear all

clc

syms n z Y

y2=sym('y(n+2)');

y1=sym('y(n+1)');

y0=sym('y(n)');

a=input('the coeffient of y(n+2)=');

b=input('the coeffient of y(n+1)=');

c=input('the coeffient of y(n)=');

nh=input('the nonhomogeneous part=');

eqn=a\*y2+b\*y1+c\*y0-nh;

ZTY=ztrans(eqn, n, z);

if a==0

d=input('the initial value y(0) is=');

ZTY=subs(ZTY,{'ztrans(y(n), n ,z)','y(0)'},{Y, d});

else

d=input('the initial value y(0) is=');

e=input('the initial value y(1) is=');

ZTY=subs(ZTY,{'ztrans(y(n), n, z)','y(0)','y(1)'},{Y, d, e});

end

eq =collect(ZTY,Y);

Y=simplify(solve(eq, Y));

y=simplify(iztrans(Y, z, n))

**INPUT:**

the coeffient of y(n+2)=1

the coeffient of y(n+1)=-2

the coeffient of y(n)=1

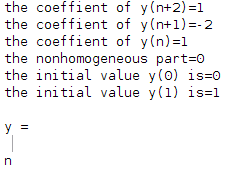
the nonhomogeneous part=0

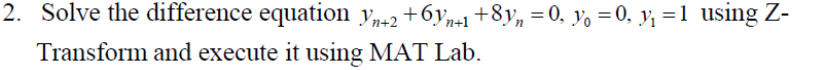
the initial value y(0) is=0

the initial value y(1) is=1

**output:**

y = n





**CODE:**

clear all

clc

syms n z Y

y2=sym('y(n+2)');

y1=sym('y(n+1)');

y0=sym('y(n)');

a=input('the coeffient of y(n+2)=');

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c=input('the coeffient of y(n)=');

nh=input('the nonhomogeneous part=');

eqn=a\*y2+b\*y1+c\*y0-nh;

ZTY=ztrans(eqn, n, z);

if a==0

d=input('the initial value y(0) is=');

ZTY=subs(ZTY,{'ztrans(y(n), n ,z)','y(0)'},{Y, d});

else

d=input('the initial value y(0) is=');

e=input('the initial value y(1) is=');

ZTY=subs(ZTY,{'ztrans(y(n), n, z)','y(0)','y(1)'},{Y, d, e});

end

eq =collect(ZTY,Y);

Y=simplify(solve(eq, Y));

y=simplify(iztrans(Y, z, n))

**INPUT:**

the coeffient of y(n+2)=1

the coeffient of y(n+1)=6

the coeffient of y(n)=8

the nonhomogeneous part=0

the initial value y(0) is=0

the initial value y(1) is=1

**OUTPUT:**

y = (-2)^n/2 - (-4)^n/2

