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**19BCE1027**

1) syms t c1 c2

c=[c1 c2];

A=input('enter the matrix A in dy/dt=Ay+h:');

nh=input('enter nh as a row vector in dy/dt=Ay+h:');

n=length(A);

[P,D]=eig(A)

PP=inv(P)

g=PP(:,1)\*nh(1)+PP(:,2)\*nh(2)

for i=1:n

u(i)=c(i)\*exp(D(i,i)\*t)+(exp(D(i,i)\*t)\*int(g(i)\*exp(-D(i,i)\*t)));

end

y=simplify(P(:,1)\*u(1)+P(:,2)\*u(2))

disp('the solution vector is given by:')

disp(y)

2)

syms x(t) y(t)

A=input('enter the matrix A in dY/dt=AY+nh:'); % Y=[x'; y']

nh=input('enter nh as a column vector in dY/dt=AY+nh:'); % nh=[f1; f2]

Y = [x; y];

odes = diff(Y) == A\*Y + nh;

odes(t)

[xSol(t), ySol(t)] = dsolve(odes);

disp('the solution is given by:')

xSol(t) = simplify(xSol(t))

ySol(t) = simplify(ySol(t))

