```
disp('1.');
syms y(t)
eqn = diff(y,t,2)-6*diff(y,t,1)+9*y==t*exp(3*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==5];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('2.');
syms y(t)
eqn = diff(y,t,2)+16*y==8*cos(4*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==0];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('3.');
syms y(t)
eqn = diff(y,t,2)-4*diff(y,t,1)+4*y==6*exp(2*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==0];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('4.');
syms y(t)
eqn = diff(y,t,2)-4*diff(y,t,1)==-4*t*exp(2*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==0];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('5.');
syms y(t)
eqn = diff(y,t,2)+9*y==cos(2*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==6];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('6.');
syms y(t)
eqn = diff(y,t,2)+9*y==cos(3*t);
Dy = diff(y,t);
cond = [y(0)==2, Dy(0)==0];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('7.');
syms y(t)
eqn = diff(y,t,2)-4*y==3*exp(-t);
Dy = diff(y,t);
```

```
cond = [y(0)==1, Dy(0)==-3];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('8.');
syms y(t)
eqn = diff(y,t,2)-8*diff(y,t,1)+16*y==32*t;
Dy = diff(y,t);
cond = [y(0)==1, Dy(0)==2];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('9.');
syms y(t)
eqn = diff(y,t,2)+2*diff(y,t,1)+5*y==10*cos(2*t);
Dy = diff(y,t);
cond = [y(0)==1, Dy(0)==1];
ysol(t)=dsolve(eqn,cond)
ysol(5)

disp('10.');
syms y(t)
eqn = diff(y,t,2)+2*diff(y,t,1)+10*y==-6*exp(-t)*sin(3*t);
Dy = diff(y,t);
cond = [y(0)==0, Dy(0)==1];
ysol(t)=dsolve(eqn,cond)
ysol(5)
```

```
1.

ysol(t) =

5*t*exp(3*t) + (t^3*exp(3*t))/6


ans =

(275*exp(15))/6

2.

ysol(t) =

cos(12*t)/16 - cos(4*t)/16 + sin(4*t)*(t + sin(8*t)/8)


ans =

cos(60)/16 - cos(20)/16 + sin(20)*(sin(40)/8 + 5)

3.

ysol(t) =
```

```
3*t^2*exp(2*t)


ans =

75*exp(10)

4.

ysol(t) =

t*exp(2*t) - exp(4*t)/4 + 1/4


ans =

5*exp(10) - exp(20)/4 + 1/4

5.

ysol(t) =

2*sin(3*t) - cos(3*t)/5 + cos(3*t)*(cos(5*t)/30 + cos(t)/6) +
 sin(3*t)*(sin(5*t)/30 + sin(t)/6)


ans =

2*sin(15) - cos(15)/5 + cos(15)*(cos(5)/6 + cos(25)/30) + sin(15)*(sin(5)/6 +
 sin(25)/30)

6.

ysol(t) =

(143*cos(3*t))/72 + cos(9*t)/72 + sin(3*t)*(t/6 + sin(6*t)/36)


ans =

(143*cos(15))/72 + cos(45)/72 + sin(15)*(sin(30)/36 + 5/6)

7.

ysol(t) =

-exp(-2*t)*(exp(t) - 2)


ans =

-exp(-10)*(exp(5) - 2)

8.
```

```
ysol(t) =

2*t + 1


ans =

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9.

ysol(t) =

cos(2*t)*((10*cos(4*t))/17 - (5*sin(4*t))/34) + sin(2*t)*((5*cos(4*t))/34 +
 (10*sin(4*t))/17 + 5/2) + (7*cos(2*t)*exp(-t))/17 - (28*sin(2*t)*exp(-t))/17


ans =

(7*cos(10)*exp(-5))/17 - (28*exp(-5)*sin(10))/17 + cos(10)*((10*cos(20))/17 -
 (5*sin(20))/34) + sin(10)*((5*cos(20))/34 + (10*sin(20))/17 + 5/2)

10.

ysol(t) =

(exp(-t)*(sin(3*t) + sin(9*t) + 12*t*cos(3*t) - 2*cos(3*t)*sin(6*t)))/12


ans =

(exp(-5)*(60*cos(15) + sin(15) + sin(45) - 2*cos(15)*sin(30)))/12
```

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