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19BCE1027

syms x r c1 c2 t

k1=input('Enter coefficient of (ax+b)^2 d^2y/dx^2:');

k2=input('Enter coefficient of (ax+b) dy/dx:');

k3=input('Enter coefficient of y:');

a=input('Enter the value of a:');

b=input('Enter the value of b:');

f1=input('Enter f in terms of x:');

f=simplify(subs(f1,x,(exp(t)-b)/a));

eq=k1\*a^2\*r^2+(a\*k2-a^2\*k1)\*r+k3;

r=solve(eq,r);

p=real(r(1));

q=imag(r(1));

if q~=0

y1=exp(p\*t)\*cos(q\*t);

y2=exp(p\*t)\*sin(q\*t);

elseif r(1)==r(2)

y1=exp(p\*t);

y2=t\*exp(p\*t);

else

y1=exp(r(1)\*t);

y2=exp(r(2)\*t);

end

yc=c1\*y1+c2\*y2;

w=y1\*diff(y2,t)-y2\*diff(y1,t);

yp=-y1\*int(y2\*f/(a^2\*k1\*w),t)+y2\*int(y1\*f/(a^2\*k1\*w),t);

yy=yc+yp;

y1=subs(yy,t,log(a\*x+b));

disp('General solution of the given ODE is given by')

disp(simplify(y1))

OUTPUT:

>> variableocf

Enter coefficient of (ax+b)^2 d^2y/dx^2:1

Enter coefficient of (ax+b) dy/dx:1

Enter coefficient of y:-2

Enter the value of a:2

Enter the value of b:-1

Enter f in terms of x:8\*(x^2)-(2\*x)+3

General solution of the given ODE is given by

2\*c2\*x - (22\*x)/15 - log(2\*x - 1)/2 - c2 + c1/(2\*x - 1)^(1/2) + x\*log(2\*x - 1) + (4\*x^2)/5 - 22/15