$^2y\frac{}{dx^2+p(x)\frac{dy}{dx}+q(x)y=r(x),ec_{2_g}endonde}sonfuncionesdefinidasenunintervalodeconvaloresen.Si\equiv$
0
$^2y\frac{}{dx^2+p(x)\frac{dy}{dx}+q(x)y=0,ec_{2_g}en_hom}$
p,q,r
I
$x_0\in$
I
$y_0,y_1\in$

$$\begin{cases}\frac{d^2y}{dx^2}+p(x)\frac{dy}{dx}+q(x)y=r(x), x\in I\\ y(x_0)=y_0\\ y'(x_0)=y_0^1\end{cases}$$

$z=$
$y'(x)$

$$\begin{cases}y'(x)=z(x)\\ z'(x)=-p(x)z(x)-q(x)y+r(x),\\ y(x_0)=y_0\\ z(x_0)=y_0^1\end{cases}$$

$w'(x)=$
$f(x,w(x))$
$w(x)=$
$(y(x),z(x))$
$f(x,w)=$
$(z,-p(x)z-$
$q(x)y+$
$r(x)$
f
$I\times^2$
$(x,w_0),(x,w_1)\in$
$I\times^2$
$w_0=$
(z_0,y_0)
$w_1=$
(z_1,w_1)

$$\|f(x,w_1-f(x,w_2)\|\leq\sqrt{(z_1-z_0)^2+(p(x)(z_1-z_0)+q(x)(y_1-y_0)^2}\leq C\|w_1-w_0\|,$$

C
$|p(x)|,|q(x)|$
$x\in$
I
f
2
I
y_1
y_2
$_{2_g}en_homy_1,c_2\in$
c_1y_1+
c_2y_2
$y\equiv$
0
$triv-$
ial

$$L[y]:=y''+py'+qy$$

$L[c_1y_1+$
$c_2y_2]=$
$c_1L[y_1]+$
$c_2L[y_2]=$
$0.$
y_p
$_{2_g}enyque_g=$
$y_g(x,c_1,c_2)$
$_{2_g}en_hom.Entonces_p+$
y_g
$_{2_g}en.$

$$L[y]:=y''+py'+qy$$

$L[y_g+$
$y_p]=$
$L[y_g]+$
$L[y_p]=$
$0+$
$r=$
$r.$
y
$L[y]=$
r
$L[y-$
$y_p]=$
$L[y]-$
$L[y_p]=$
$r-$
$r=$
$0.$
c_1
c_2
$y(x)-$
$y_p(x)=$