ЗАДАНИЕ 1

Для заданного дифференциального оператора $Θ\_{1}\dot{y}+Θ\_{2}y=Θ\_{3}x\left(t\right), \dot{y}\left(t=0\right)=\dot{y}\left(0\right),$

$y\left(t=0\right)=y\left(0\right), t\in \left[0,50\right], ∆t=0.1, $описывающего поведение исследуемого динамического объекта, найти матрицу С задающую по правилу $z\left(t\right)=CΘ, где ΘT=\left(Θ\_{1},Θ\_{2},Θ\_{3}\right), z\in Z$ оператор отображения множества значений вектора его параметров $Θ$ на множество выходов (измерений) Z информационно-измерительной системы.

$$Θ\_{10}=0.05$$

$$Θ\_{20}=0.3$$

$$Θ\_{30}=30$$

$$x\left(t\right)=exp\left\{-5t\right\} $$

$$y^{τ}\left(0\right)=\left(y\_{1}\left(0\right), y\_{2}\left(0\right)\right)$$

$$\left\{\begin{array}{c}\dot{y\_{1}}=y\_{2}\\\dot{y\_{2}}=-Θ\_{2}\dot{y\_{1}}-Θ\_{1}y\_{2}+Θ\_{3}x\left(t\right)\end{array}\right.$$

1)

$$\left\{\begin{array}{c}\frac{d}{dt}\left(\frac{∂y\_{1}}{∂Θ\_{1}}\right)=\frac{∂y\_{2}}{∂Θ\_{1}}\\\frac{d}{dt}\left(\frac{∂y\_{2}}{∂Θ\_{1}}\right)=-Θ\_{20}\frac{∂y\_{1}}{∂Θ\_{1}}-Θ\_{10}\frac{∂y\_{2}}{∂Θ\_{1}}-y\_{2}\end{array}\right.$$

2)

$$\left\{\begin{array}{c}\begin{array}{c}\frac{d}{dt}\left(\frac{∂y\_{1}}{∂Θ\_{2}}\right)=\frac{∂y\_{2}}{∂Θ\_{2}}\\\frac{d}{dt}\left(\frac{∂y\_{2}}{∂Θ\_{2}}\right)=-Θ\_{20}\frac{∂y\_{1}}{∂Θ\_{2}}-Θ\_{10}\frac{∂y\_{2}}{∂Θ\_{2}}-y\_{1}\end{array}\end{array}\right.$$

$$С=\left(\begin{matrix}\frac{∂y\_{1}}{∂Θ\_{1}}&\frac{∂y\_{2}}{∂Θ\_{1}}\\\frac{∂y\_{1}}{∂Θ\_{2}}&\frac{∂y\_{2}}{∂Θ\_{2}}\end{matrix}\right)=\left(\begin{matrix}U\_{1}&U\_{2}\\U\_{3}&U\_{4}\end{matrix}\right)$$



