

DP3_2

两个状态空间模型等效，即其传递函数相同。计算 $G(s) = C(sI - A)^{-1}B$

其他系数为0

$$G_1(s) = \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} s & 1 \\ a & s+b \end{pmatrix}^{-1} \begin{pmatrix} 0 \\ d \end{pmatrix} = \frac{1}{s^2+bs+a} \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} * & 1 \end{pmatrix} \begin{pmatrix} 0 \\ d \end{pmatrix} = \frac{d}{s^2+bs+a}$$

又其他系数为0 $a=10, b=2, d=13$.

$$G_2(s) = \begin{pmatrix} 1 & -1 \end{pmatrix} \begin{pmatrix} s & -1 \\ 10 & s+2 \end{pmatrix}^{-1} \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \frac{1}{s^2+2s+10} \begin{pmatrix} 1 & -1 \end{pmatrix} \begin{pmatrix} s+2 & 1 \\ -10 & s \end{pmatrix} \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \frac{13}{s^2+2s+10}$$