Example 5.8

Q: design deadbeat controller

$$G_{ZAS}(z) = \frac{z^{-2}}{1 - z^{-1}}$$

Solution $G_{ZAS}(z) = \dfrac{1}{z^2 - z} = \dfrac{1}{z(z-1)}$

no zero outside the unit circle

one pole at $z = 1$, need included

as the zero of $1 - G_{cl}(z)$

$G_{cl}(z) = z^{-2}$? k如何求 内在延迟+相对阶次

ZAS的分母-分子 $2 - 0 = 2$

$$C(z) = \frac{1}{G_{ZAS}(z)} \left[\frac{z^{-k}}{1 - z^{-k}} \right]$$

$$C(z) = (z^2 - z) \frac{z^{-2}}{1 - z^{-2}} \qquad \frac{z(z-1)}{(z-1)(z+1)} = \frac{z}{z+1}$$

$$= (z^2 - z) \frac{1}{z^2 - 1} \qquad = \frac{1}{1 + z^{-1}}$$

$$= \frac{z^2 - z}{z^2 - 1} = \frac{1 - z^{-1}}{1 - z^{-2}} \overset{?}{=} \frac{1}{1 + z^{-1}}$$

$a^2 - b^2 = (a+b)(a-b)$