Example 5.8

Q: design deadbeat controller

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

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

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为何求

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

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

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

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