$$\frac{Y(s)}{D(s)} = \frac{\frac{s+3}{s^3+2s^2+2s}}{1+\frac{k(s+3)}{s^3+2s^2+2s}} = \frac{s+3}{s^3+2s^2+2s+ks+3k}$$

$$= \frac{s+3}{s^3+2s^2+(2+k)s+3k}$$

$$\lim_{t\to\infty} y(t) = \lim_{s\to 0} sY(s) = \lim_{s\to 0} s \cdot \frac{s+3}{s^3+2s^2+(2+k)s+3k} \cdot \frac{1}{s} = \frac{3}{3k} = \frac{1}{k}$$

Stability:

s^3	1	$2+k$
s^2	2	$3k$
s^1	$-\frac{1}{2}\begin{vmatrix} 1 & 2+k \\ 2 & 3k \end{vmatrix}$	
s^0	$3k$	

$$\frac{3k-2(2+k)}{-2} = \frac{k-4}{-2} = 2-\frac{k}{2} > 0 \Rightarrow k < 4$$

effect of disturbance bounded below by $\frac{1}{4}$