Example 10-8: The system function of the IIR system

$$y[n] = 0.5y[n-1] + 3x[n-2]$$

can be written down from the filter coefficients as

$$H(z) = \frac{3z^{-2}}{1 - 0.5z^{-1}} = \frac{3}{z(z-0.5)}$$

The system has poles at $z = 0$ and $z = 0.5$, and taking the limit $\lim_{z \to \infty} H(z)$, we get $H(z) \to 3/z^2 \to 0$. Thus, it also has two zeros at $z = \infty$.