2.1 Consider the continuous-time system with transfer function

\[ G(s) = \frac{1}{(s + 5)} \]

Assume this system is preceded by an ideal sampler with sampling period \( T \), and by a zero-order hold block. Determine the ZOH pulse transfer function \( \tilde{G}(z) \) of the system.

2.2 Same configuration as before, but with the continuous-time system having transfer function

\[ H(s) = \frac{1}{(s + 4)} \]

Determine the ZOH pulse transfer function \( \tilde{H}(z) \) of the system.

2.3 Same configuration as before, but with the continuous-time system having transfer function

\[ G(s)H(s) = \frac{1}{(s + 4)(s + 5)} \]

Determine the ZOH pulse transfer function \( \tilde{G\tilde{H}}(z) \) of the system.

Compare your answer with the product \( \tilde{G}(z)\tilde{H}(z) \); see slide 19 of Part 2 to understand why I ask such question.

2.4 Would one be able to determine where the poles of \( \tilde{G\tilde{H}}(z) \) are, without actually computing such transfer function? Explain.