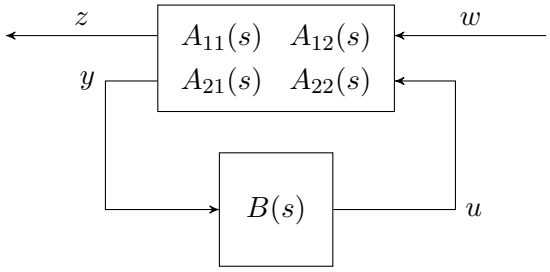
Handin 2

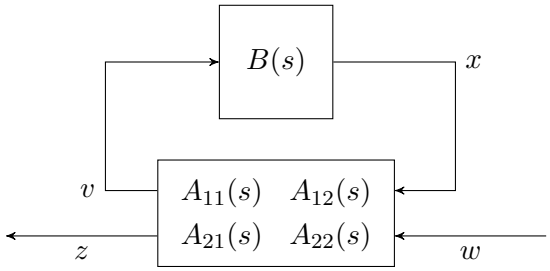
1. Consider again the lower linear fractional transformation (LFT) from lectures.



There we saw that the transfer function from w to z in the above figure was given by the lower LFT:

$$\mathcal{F}_l(A, B) = A_{11}(s) + A_{12}(s)B(s)(I - A_{22}(s)B(s))^{-1}A_{21}(s).$$

We may analogously define the upper LFT, denoted $\mathcal{F}_u(A, B)$, as the transfer function from w to z in the following figure:



Find an expression for $\mathcal{F}_u(A, B)$. Simplify

$$\mathcal{F}_u\left(A^{-1}, \mathcal{F}_l(A, B)\right)$$

under the assumption that $A_{12}(s)$ and $A_{21}(s)$ are invertible. Comment on your solution.

2. Do Zhou 5.8. Now look up the definition of a normalised left-coprime factorisation. How can we modify the procedure to find normalised left-coprime factorisations?