Problem Wk.5.1.2: Cascading systems

Let H_1 be the system with input x and output w, defined by:

$$w[n] - w[n-1] = x[n] - 2x[n-1]$$

and, let H_2 be the system with input w and output y, defined by:

$$y[n] - y[n-1] = w[n] + w[n-2]$$

Suppose we form the cascade of H_1 and H_2 to get a system whose input is x and whose output is y.

Below you need to specify several system functions. Do so by writing the coefficients of the polynomials in R for the numerator and denominator of the system functions. Enter the coefficients in the order they would be provided to construct a `Polynomial` (highest power first). The two polynomials for the system function are checked together, since it is their ratio that makes sense.

To specify the system function, enter a sequence of coefficients for the numerator polynomial followed by a forward slash (`/`) and another sequence of coefficients for the denominator. **Do not enter any commas, just numbers separated by spaces and a single slash.** The numbers need to be integers or floating point. Here is a sample response:

```
1 -2 0.3 / 3 0.1
```

which represents $\dfrac{R^2 - 2R + 0.3}{3R + 0.1}$.

Note that the first (highest power) coefficient of a polynomial must never be zero.

1. Write the system function for H_1.

   Numerator / Denominator: [   ]

2. Write the system function for H_2.

   Numerator / Denominator: [   ]

3. Write the system function of the cascade of H_1 and H_2.

   Numerator / Denominator: [   ]

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