Problem Wk.4.3.1: Wall FInder

A difference equation is in the form:

$$y[n] = c_0 y[n-1] + c_1 y[n-2] + \ldots + c_{k-1} y[n-k] + d_0 x[n] + d_1 x[n-1] + \ldots + d_j x[n-j]$$

Specify the dCoeffs: $d_0 \ldots d_j$ and the cCoeffs: $c_0 \ldots c_{k-1}$ for each of the difference equations below.

Refer to Section 5.7 of the notes for examples.

For each question, enter a sequence of numbers representing the coefficients.

If one set of coefficients is empty, enter none, otherwise enter a sequence of numbers separated by spaces (no commas, parens, brackets, etc).

1. Enter your answer for Check Yourself 1 [   ]
2. The difference equation for the controller (so that the velocity is 5m/s when the target is 1m in front of the robot):
   dCoeffs (input): [   ]
   cCoeffs (output): [   ]
3. The difference equation model of the the plant (T = 0.1 seconds).
   dCoeffs (input): [   ]
   cCoeffs (output): [   ]
4. The difference equation model of the sensor:
   dCoeffs (input): [   ]
   cCoeffs (output): [   ]
5. The combined difference equation for the system (relates the output D_o to the input D_i).
   dCoeffs (input): [   ]
   cCoeffs (output): [   ]

6.01SC Introduction to Electrical Engineering and Computer Science
Spring 2011