Problem Wk.5.5.3: Putting It Together

Read the handout for Homework Assignment 2.

System Function

Enter the system function $\frac{\Theta_h}{\Theta_l}$ for the entire light tracking system below.

Numerator:

Denominator:

Block Diagram

Upload a PDF file containing your block diagram for this system. **Make sure you have labeled all of the signals mentioned in the handout**. Please double-check that your file is a valid PDF before uploading.

Browse... Upload File

Poles

Enter the poles of the system, as algebraic expressions involving k_c and T, into the boxes below. Assume the following values for constants (the same as in `hw2Work.py`):

Variable	Value
k_s	5 volts/rad
k_m	1000 (rad / sec^2) / Amp
k_b	0.5 volts / (rad / sec)
r_m	20 ohms

If a pole appears n times, enter it into n boxes. If there are more boxes than poles, enter `none` (no quotes) in the remaining boxes.

This question is either marked as entirely correct, or entirely wrong. In order to be marked correct, you must have **all** of the poles correct, and no extra poles entered. This means that you will not see any green checks if you do not have the complete answer, even if part of your answer is correct.

If you need to take the square root of a quantity, you can do so either by using the `sqrt(...)` function, or by raising it to the (1/2) power. For example, enter $\sqrt{3}$ as any of `sqrt(3)`, `3**(0.5)`, or `3**(1/2)`.

Poles:

Code

Enter your code for `lightTrackerModel` below. You may assume that all of the pieces you have already entered (`integrator`, `controllerAndSensorModel`, `motorModel`, `plantModel`), as well as the constants defined in `hw2Work.py`, are defined for you; there is no need to redefine them. Your code may use functions from the `sf` module, such as `sf.Gain(...)`; no `import` statements should be needed.

```
def lightTrackerModel(T,k_c):
    pass #your code here
```

6.01SC Introduction to Electrical Engineering and Computer Science

Spring 2011