



정보통신 수학 및 실습

Lab assignment

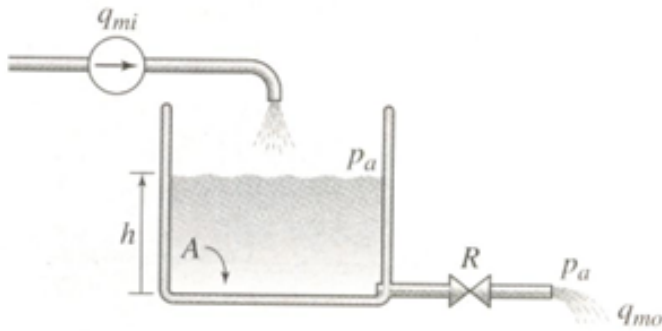


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Chapter 8 Lab Assignment



A hydraulic system with a flow source.

If the outlet is a pipe that discharges to atmospheric pressure p_a and provides a resistance, R , to flow that is proportional to the pressure difference across its ends, then find the outlet flow rate q_{mo} and the differential equation of $h(t)$. Hint: q_{mo} is $(1/R) \cdot$ (the pressure difference across its ends).

Now solve your differential equation of $h(t)$ using MATLAB and plot $h(t)$ against the time. The values of the parameters are as follows: (units are ignored)

$$q_{mi} = 25, R = 5, A = 10, h(0) = 10, \rho = 2.$$

2) Solve the following 2 order differential equation using MATLAB.

$$y'' + 2y' + y = 0, y(0) = 1, y(1) = 3$$

3) For the following differential equation, solve the response $y[n]$ when $x[n]$ is the sampling values of $\sin(2\pi t)$, $0 \leq t \leq 2\pi$, $\Delta t = 0.01$. Plot $y[n]$ and $x[n]$ against n .

$$y[n] = 0.7 * x[n] + 0.3 * x[n - 1]$$