Test

Changyuan Lin

February 15, 2018

Contents

1 Chapter 2

1.1 JavaScript

1.2 Answer Sheet via Email

Student ID:
token:
token:
Question1:
Reset Submit
Student ID:
token:
token:
Question1:
Reset Submit

1.3 Answer Sheet via Post

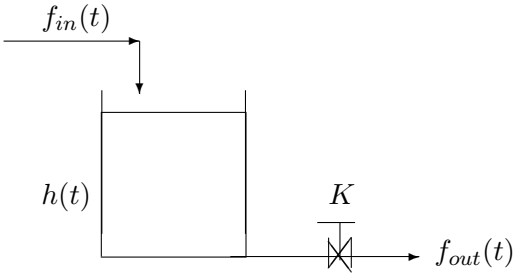
Name:

Gender: male female
E-mail:

Reset Submit Print

1.4 ditaa & LaTeX Graph

For the physical process of tank dynamics given in the Figure below:



Solution:

- $\frac{dh}{dt} = -\frac{1}{K\overline{A}}h + \frac{1}{\overline{A}}f_{in}$
- Assume that the tank height is measured, $y(t) = h(t)$

$$\Sigma(A, B, C, D) = \Sigma\left(-\frac{1}{K\overline{A}}, \frac{1}{\overline{A}}, 1, 0\right)$$

- The state-space realization is given as:

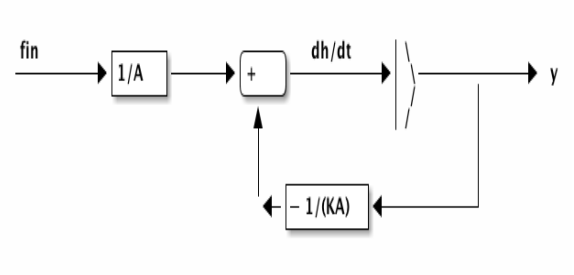


Figure 1: Block diagram elements.

- $$\Phi = e^{-\frac{0.2}{K\overline{A}}}, \quad \Gamma = -K\left(e^{-\frac{0.2}{K\overline{A}}} - 1\right), \quad \theta = 1$$

$$\Sigma(A_d, B_d, C_d, D_d) = \Sigma\left(e^{-\frac{0.2}{K\overline{A}}}, -K\left(e^{-\frac{0.2}{K\overline{A}}} - 1\right), 1, 0\right)$$

- Assume that $h(0) = 0$. Laplace transform:

$$\frac{Y(s)}{U(s)} = \frac{5}{s+1}$$

$$\boxed{\tau = 1, \quad \tau_d = 0 \Rightarrow \Delta t = (0.1 \sim 0.2)1\tau = 0.1 \sim 0.2}$$