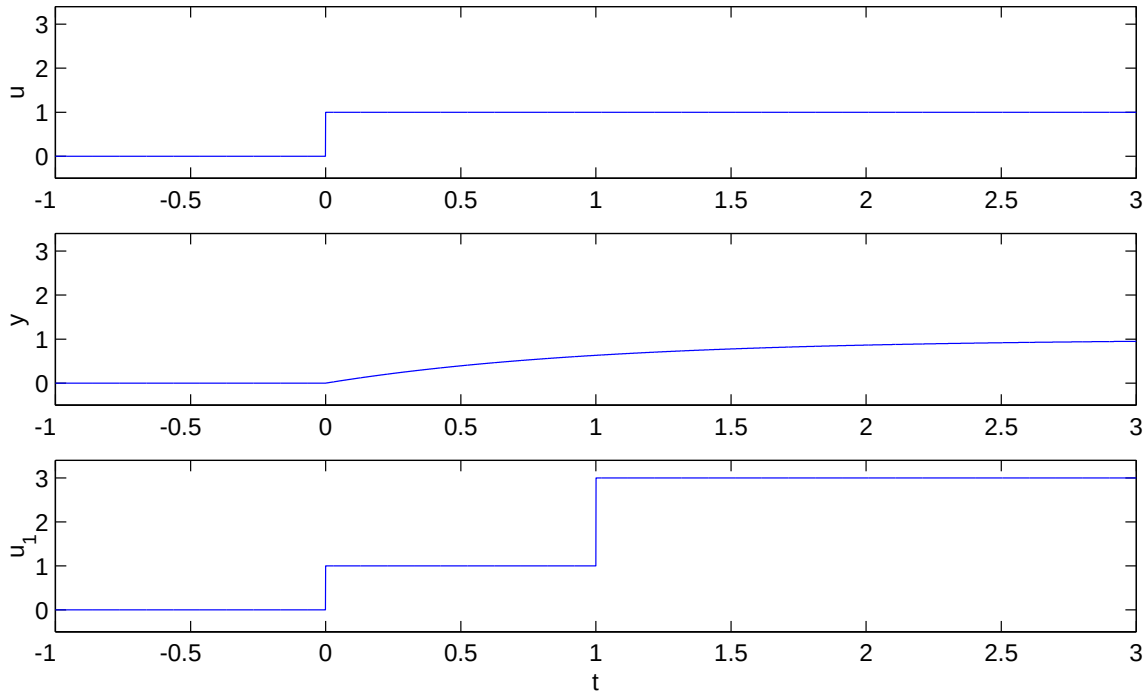
Superposition I

The response of an LTI system G to input $u(t)$ is $y(t)$, as shown in the figure. What is the response of the system to the input $u_1(t)$? Sketch your answer on a 3×5 card. When done, indicate the confidence you have in your answer:

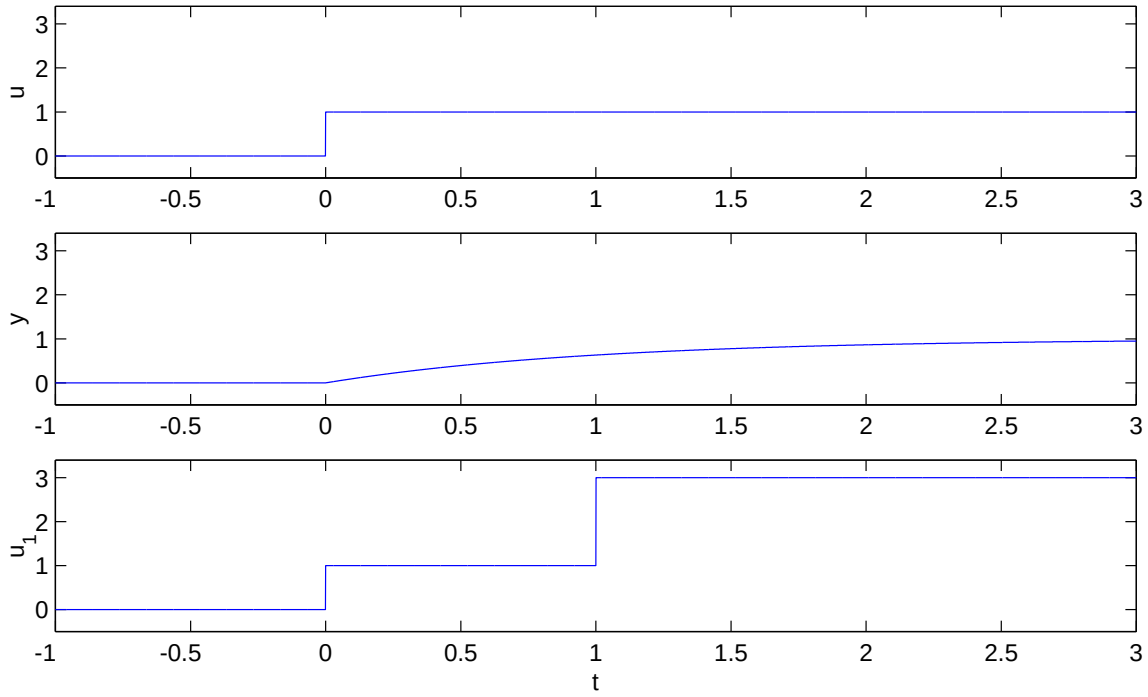
1. 100%
2. 75%
3. 50%
4. 25%
5. 0%

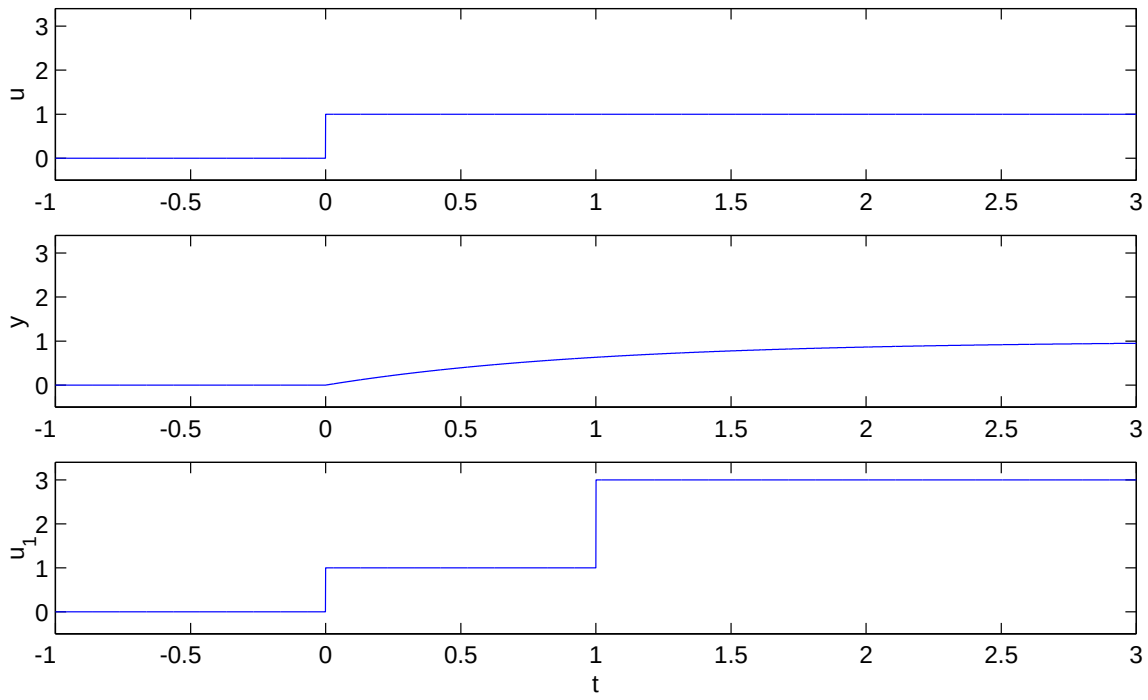


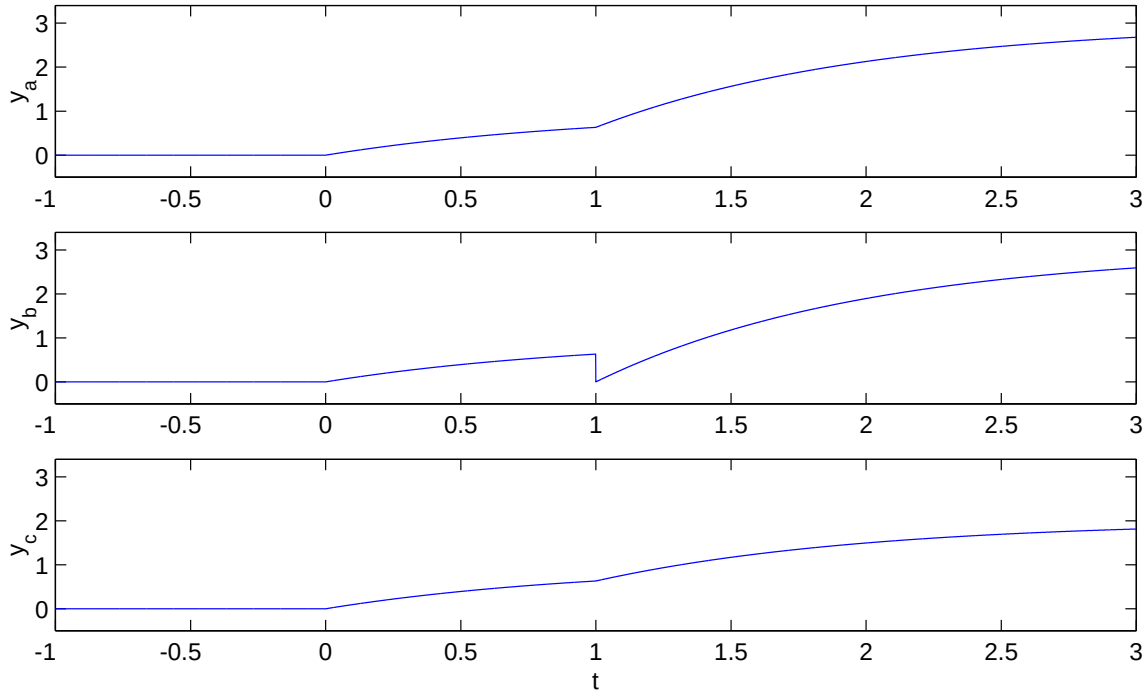
Superposition II

The response of an LTI system G to input $u(t)$ is $y(t)$, as shown in the figure. What is the response of the system to the input $u_1(t)$?

1. $y_a(t)$
2. $y_b(t)$
3. $y_c(t)$
4. I don't know




u
y
u1
t


ya
yb
yc
t

Superposition II

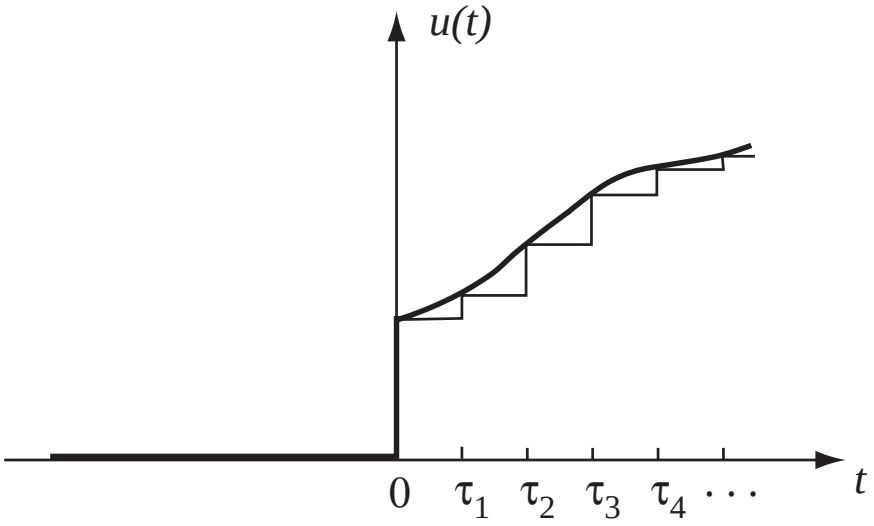
The response of an LTI system G to input $u(t)$ is $y(t)$, as shown in the figure. What is the response of the system to the input $u_1(t)$?

The correct answer is:

1. ♡ $y_a(t)$
2. $y_b(t)$
3. $y_c(t)$
4. I don't know

Response to General Input

Consider the input $u(t)$ to a system G, with step response $g_s(t)$. The input is approximated by a staircase function, as shown below:



Find an (approximate) expression for the output of the system, $y(t)$.

$$y(t) \approx \ ?$$

Response to General Input

My confidence that I have the correct answer is:

1. 100%
2. 80%
3. 60%
4. 40%
5. 20%
6. 0%

Response to General Input

The correct answer is

$$\begin{aligned} y(t) &\approx u(0)g_s(t) \\ &\quad + \sum_{n=1}^{\infty} \left[u(\tau_n) - u(\tau_{n-1})\right] g_s(t-\tau_n) \end{aligned}$$

My answer

1. Was completely correct
2. Was mostly correct, with one or two minor errors
3. Had many errors
4. Was completely incorrect