

### Grupo 3

#### Participantes:

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### Taller 2 Ejercicio 7

#### Enunciado

Implementar un sistema de control con modelo de referencia neuronal para una planta con la siguiente función de referencia:

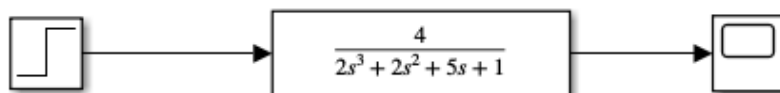
$$G(s) = \frac{4}{2s^3 + 2s^2 + 5s + 1}$$

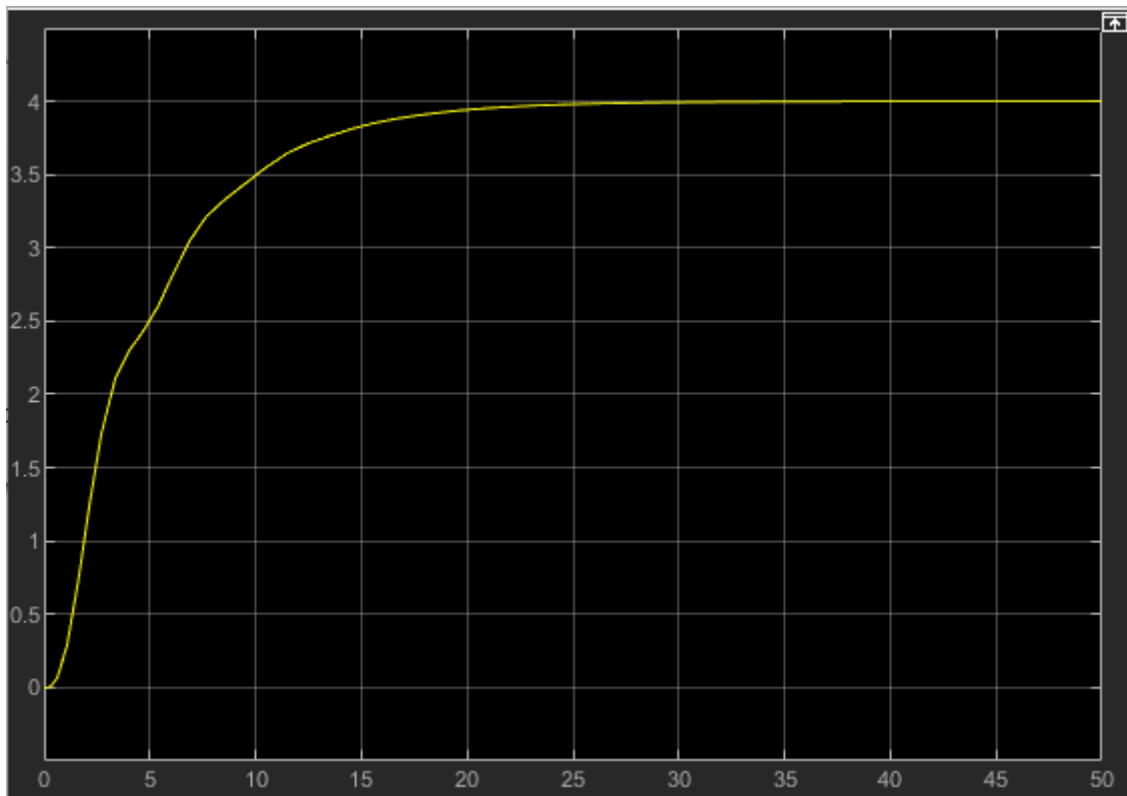
#### Requerimientos de diseño

- Entrada de referencia escalón unitario  $\mu(t)$ .
- Oscilación en estado estable inferior al 10%.

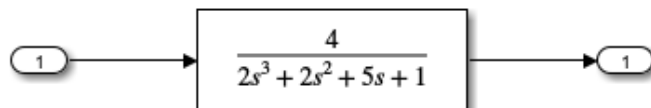
### Solución

#### Scope de la función de transferencia

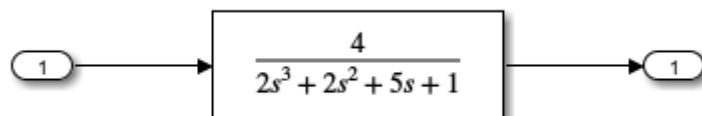




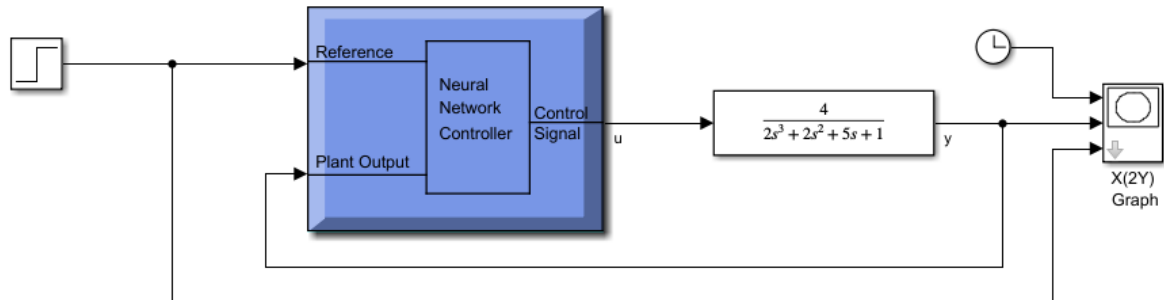
Modelo de la planta



Modelo de la planta de referencia



## Sistema de control en simulink



## Configuración de controlador de red neuronal

Model Reference Control

File Window Help

### Model Reference Control

Network Architecture

Size of Hidden Layer	5	No. Delayed Reference Inputs	2
Sampling Interval (sec)	0.1	No. Delayed Controller Outputs	2
<input type="checkbox"/> Normalize Training Data		No. Delayed Plant Outputs	2

Training Data

Maximum Reference Value	1	Controller Training Samples	300
Minimum Reference Value	0		
Maximum Interval Value (sec)	8	Reference Model:	Browse
Minimum Interval Value (sec)	4		ModeloPlantaReferencia7

Generate Training Data Import Data Export Data

Training Parameters

Controller Training Epochs	650	Controller Training Segments	2
<input checked="" type="checkbox"/> Use Current Weights		<input type="checkbox"/> Use Cumulative Training	

Plant Identification Train Controller OK Cancel Apply

### Plant Identification

#### Network Architecture

Size of Hidden Layer

Sampling Interval (sec)

☐ Normalize Training Data

No. Delayed Plant Inputs

No. Delayed Plant Outputs

#### Training Data

Training Samples

Maximum Plant Input

Minimum Plant Input

Maximum Interval Value (sec)

Minimum Interval Value (sec)

☐ Limit Output Data

Maximum Plant Output

Minimum Plant Output

Simulink Plant Model:

#### Training Parameters

Training Epochs

☒ Use Current Weights

Training Function

☐ Use Validation Data

☐ Use Testing Data

## Gráfica de simulación

