**System Interconnections in Simulink**

**Lab 07**

A logo of a university of engineering and technology

Description automatically generated

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**Lab 07**

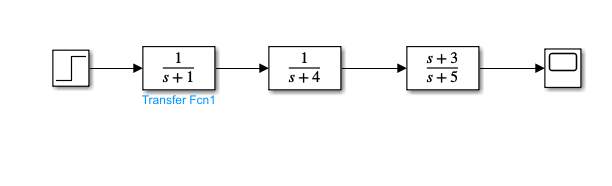
**Series System Interconnection**

**Find the equivalent system of the following systems connected in series. Prove it using Simulink.**

G1(s) = 1/(S+1);

G2(s) = 1/(s+4);

G3(s) = (s+3)/(s+5)

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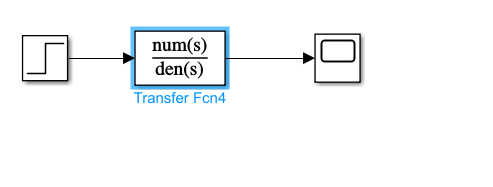
**A graph with a line going up

Description automatically generated**

**Equivalent System**

In order to find the equivalent system multiply the transfer functions. So the equivalent system would be as follows.

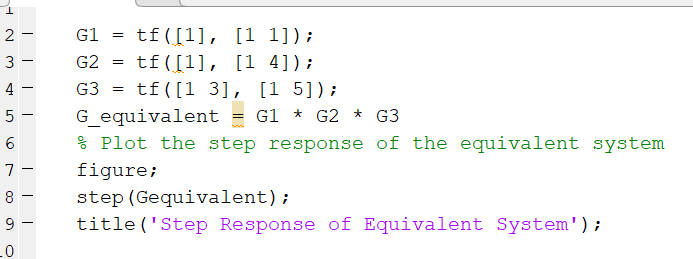
G(s) = (s+3)/ (s3 + 10\*s2 + 29\*s + 20)

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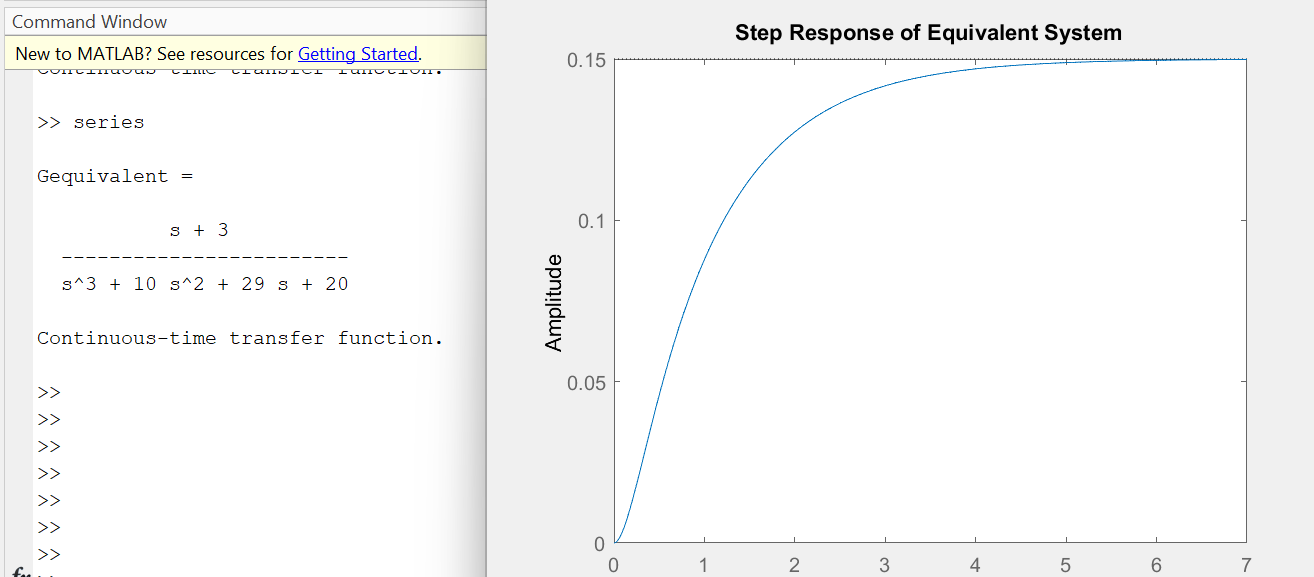
**A graph with a curve

Description automatically generated**

**MATLAB Code**

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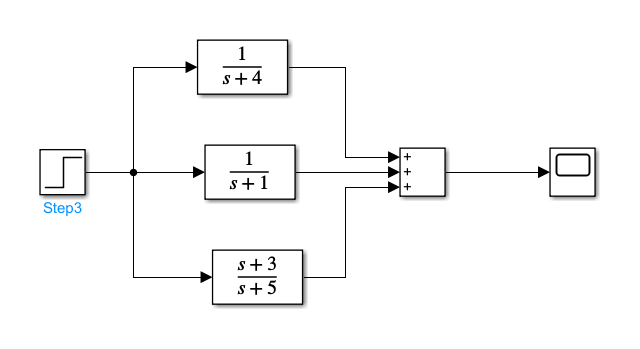
**Output**

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**A screen shot of a graph

Description automatically generated**

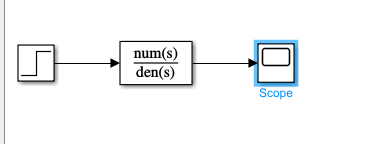
**Parallel System**

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**A graph with a yellow line

Description automatically generated**

**Equivalent System**

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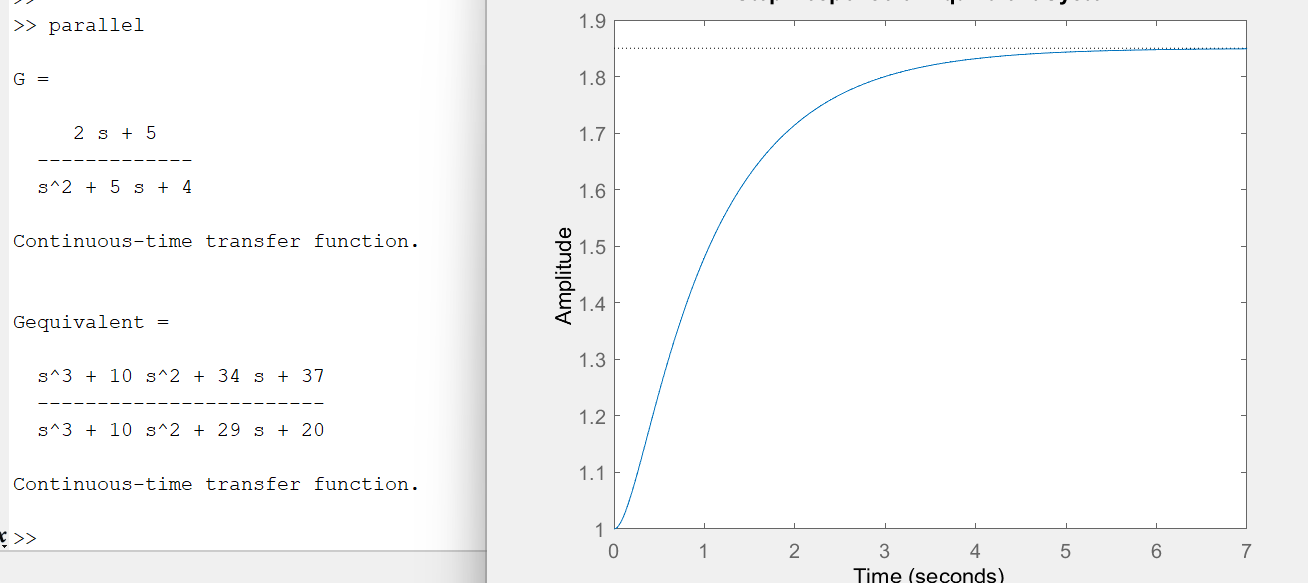
**A graph with a yellow line

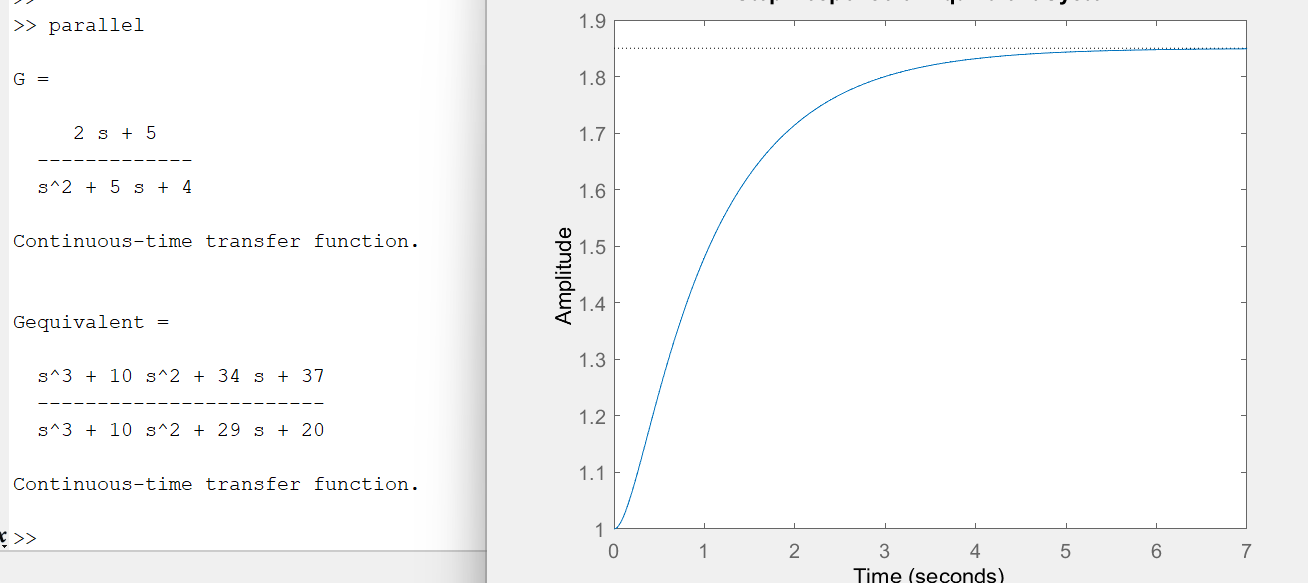
Description automatically generated**

**MATLAB Code**

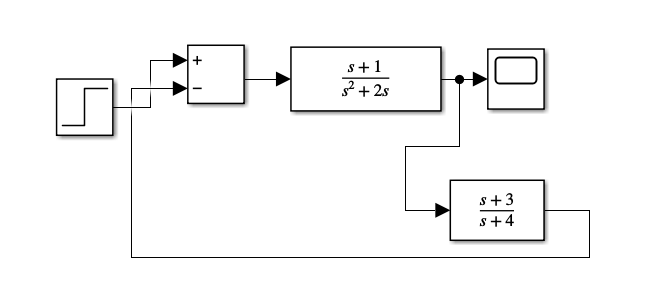
**A screen shot of a computer code

Description automatically generated**

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**Negative feedback system interconnection:**

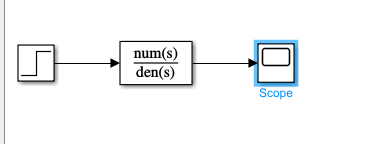
****

**Output**

**A graph with a yellow line

Description automatically generated**

**Equivalent System:**

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**A graph with a yellow line

Description automatically generated**

**MATLAB Code**

**A screenshot of a computer

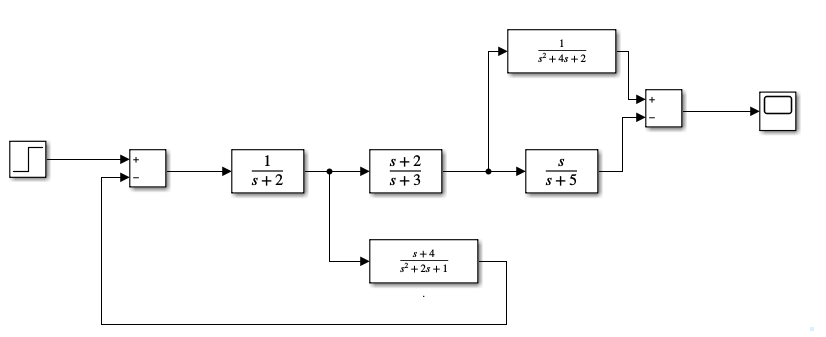
Description automatically generated**

**Output**

**A graph of a step response

Description automatically generated**

**Complex Interconnected System**

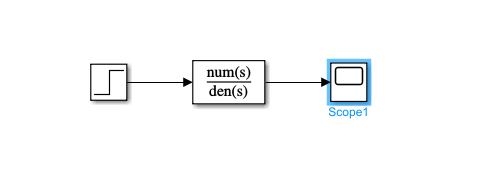
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**Output**

**A graph with a yellow line

Description automatically generated**

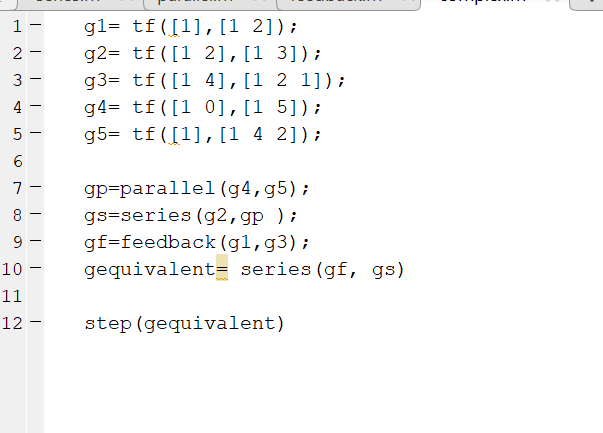
**Equivalent System**

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**A graph with a yellow line

Description automatically generated**

**Matlab Code**

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**Output**

**A math equation with numbers and a line

Description automatically generated with medium confidence**

**A graph of a step response

Description automatically generated**