

# EENG307: Lectures 10-11 Handout

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## 1 Key Points

These provide measures we can use for controller design, especially to improve transient performance. As we go through the content of Lectures 10-11, fill in the following table with the key information needed to predict the time response characteristics.

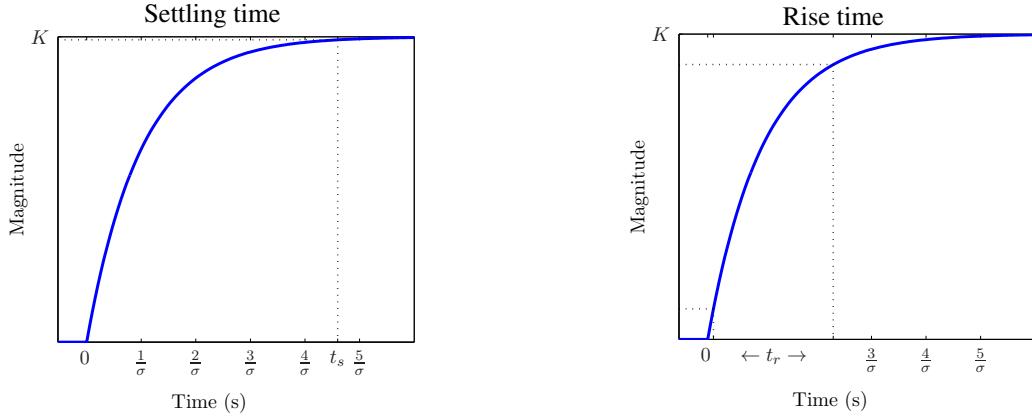
Characteristic	First Order Systems	Second Order Systems
Standard Equation		
Terms		
Time Constant		
Settling Time		
Rise Time		
Percent Overshoot		
DC Gain		

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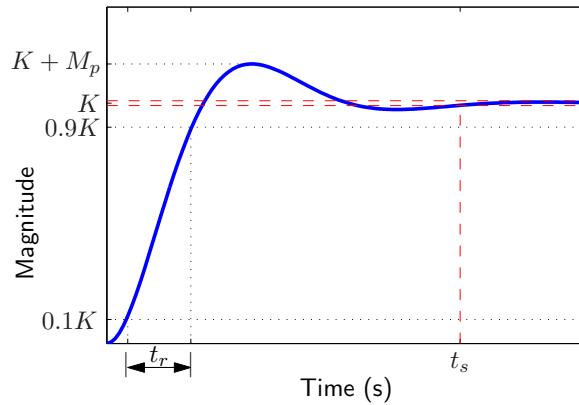
## 2 Reference: Key Plots

### 2.1 First Order Response (to a Step Input)



### 2.2 Second Order Response (to a Step Input)

Rise time, settling time, and overshoot:



#### Under-damped poles in the complex plane:

Consider the complex pole pair below. Label the axes with relevant information about the pole locations based on the standard second-order transfer function form. Consider both polar and rectangular coordinates.

