EE Quals Problem
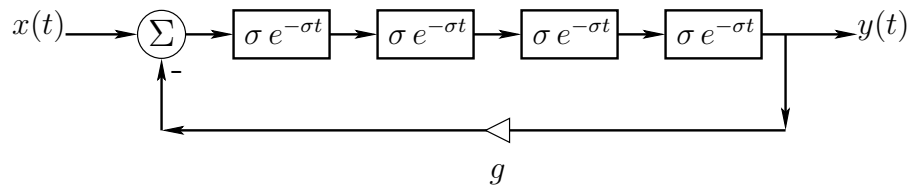January 10-14, 2011
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Consider the following system:

1. Where are the *open-loop poles and zeros?*

2. What values of σ yield a *stable open-loop system?*

3. Find the *transfer function* of the system from its input x to its output y.

4. Sketch the *root locus* of the system as g grows positively from zero.

5. What is the range of $g \geq 0$ for which the system is stable?

6. What is the resonance frequency ω_0 at the stability limit?

7. Describe how to *digitize* this system, assuming σ and g will be used as variable controls.