

#### ENEE 610 To Consider #4

1. Read sections 8.5, 8.6, and 8.7, pages 352 - 378, on general positive real function synthesis as well as active RC synthesis.

2. Synthesize by an active RC circuit

$$\frac{V_o}{V_i} = \frac{3s+5}{(3s+1)(s^2+2s+5)}$$

3. Find the even part of

$$y(s) = \frac{s^2 + as + 2}{s^2 + 3s + 4}$$

and then evaluate this for  $s = j\omega$ . Find those  $a$  for which the real part is non-negative for all  $s = j\omega$ .

4. For the  $y(s)$  of 3. above make it into a minimum function by adding or subtracting a constant (that is, if it is positive real subtract a constant and if not add a constant [which would, though, require a negative resistor in the circuit]).

Then realize the resulting minimum function use the Richards' functions to synthesize as far as possible in cascade form.