ENEE 610 To Consider #1

1. Read pages 336 - 347 of the text about positive real functions and reactance function (lossless) synthesis and glance through the rest of Chapter 8.

2. Determine for what constants, a and b, the following admittance is i) positive real ii) a reactance function:

$$y(s) = \frac{s^2 + as + 5}{s^3 + as^2 + 10s + b}$$

3. Synthesize the y(s) of 2. for those a and b for which it is a reactance function. Analyze the resulting circuit to check that your result is valid.

4. Show that the following is a positive real reactance function and give the First Cauer and the Second Cauer synthesis for it.:

$$y(s) = \frac{(s^2 + 2)(s^2 + 7)}{s(s^2 + 3)(s^2 + 11)}$$

5. Create a degree three reactance function which assumes the value 1 at s=1 and the value 2 at s=2.