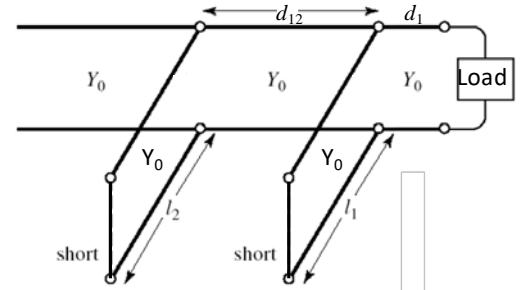


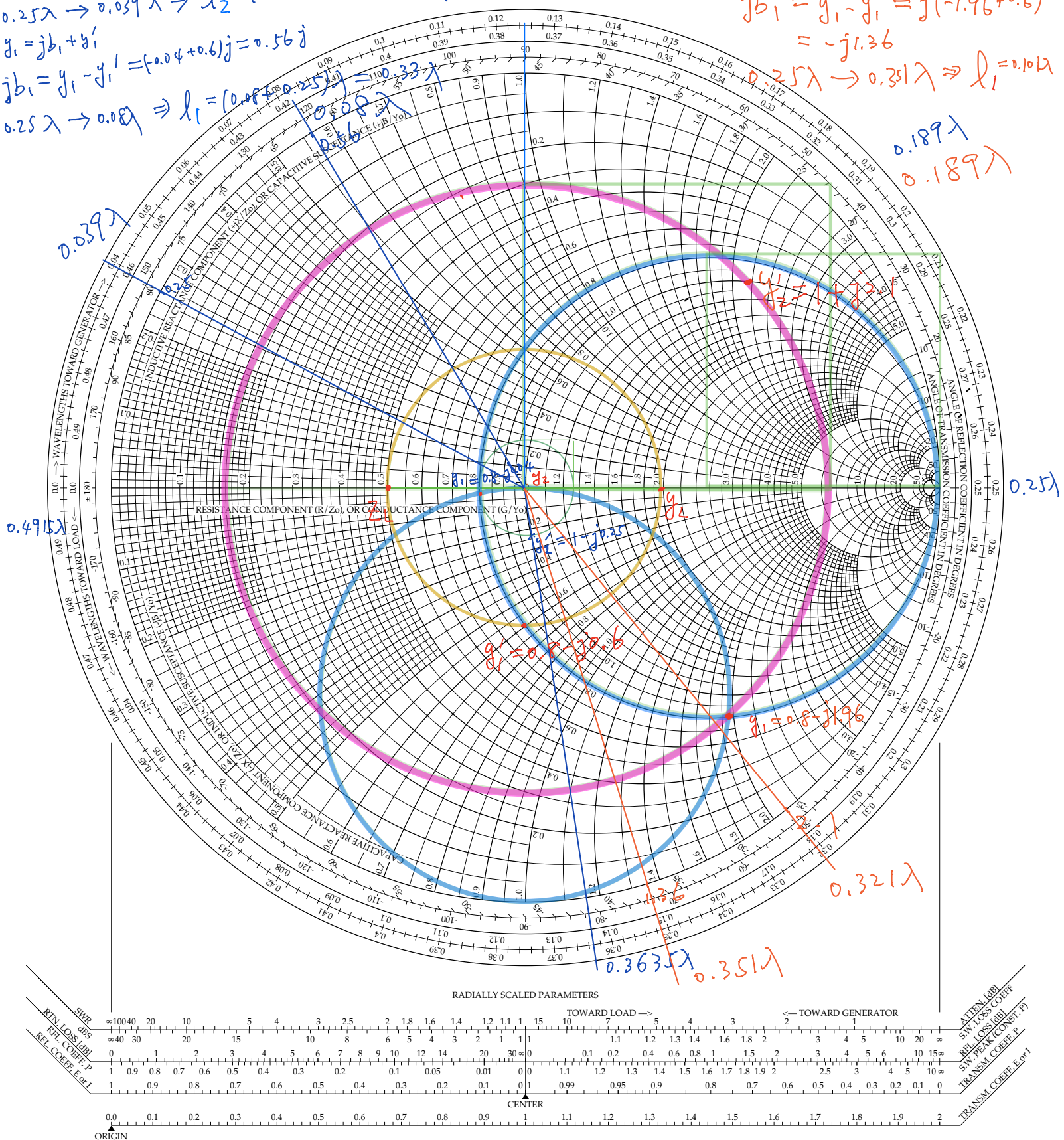
(注意: 僅可使用國家考試用型計算機;第二、四題需用 Smith Chart 繪圖方法求解, 並請於答案卷上也同時標示利用 Smith Chart 所求得的答案。不論有無作答, Smith Chart 兩張都要寫上姓名學號並一齊繳回。)

2. {20%} A $50\ (\Omega)$ transmission line of length $d_1 = \lambda/8$ is connected to a normalized load impedance $Z_{L,n} = 0.5$ followed by a double-stub tuner spaced an $(3/8)\lambda$ apart ($d_{12} = 3\lambda/8$), as shown below. (a) Find the required lengths l_1 and l_2 of the short-circuited stubs to achieve a match between the line and the load. (plot your procedures on Smith chart) {15%}. (b) Plot a 'forbidden region' where those Z_L 's are impossible to achieve matching by this double-stub tuner. How to determine the forbidden region of Z_L on the Smith chart? Describe your method briefly and plot your result on a simplified Smith chart on your answer sheet {5%}.



Solution:

$$0.25 \lambda \rightarrow 0.08 \lambda$$



The Complete Smith Chart

Black Magic Design

forbidden
region of Z_L

