Benha University
Faculty of Engineering at Shoubra
Electrical Engineering Department

Microwave fundamentals
3rd Year Communications
(2018-2019)

Sheet 4

---

1. Plot the following normalized impedance/admittance points on impedance/admittance Smith chart; find the corresponding normalized admittance/ impedance values from the chart.
   (a) Za =0.4+j0.8 (b) Zb =3-j (c) Yc =0.4 (d) Yd=0.4+j0.8 (e) Ye=-j2.0

2. Given is an open-circuited lossless line, for the following line lengths find its input impedance on smith chart.

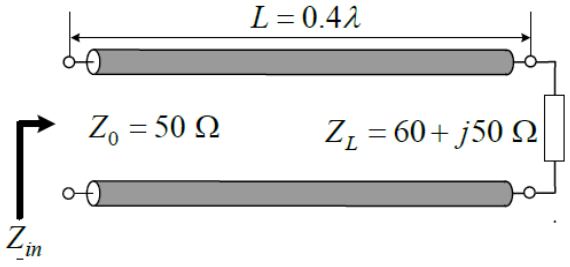
points	A	B	c	D	E
Line length	0	$\lambda/16$	$2\lambda/16$	$3\lambda/16$	$4\lambda/16$
Input imp.					

3. Given ZL=30-j40 connected to 50Ω line
   a. Sketch the locus of all possible input impedances for varying line length
   b. Determine two purely possible impedance and corresponding line length.

4. Mark the reflection factor of points in the table below in smith chart, and find the value of corresponding normalized impedances.

points	A	B	C	D	E	F
Γ	$1\angle 0^o$	$1\angle 45^o$	$1\angle 90^o$	$1\angle 180^o$	$1\angle -90^o$	$0.5\angle 0^o$
Normalized impedance						

5. Use the Smith chart to find the following quantities for the transmission-line circuit in the figure below.



(a)The SWR on the line. (b) The reflection coefficient at the load. (c) The load admittance. (d) The input impedance of the line. (e) The distance from the load to the first voltage minimum.

Good Luck

Dr. Gehan Sami