Math 300 – Jochen Denzler – UTK – Spring 2003

Concerning the warning at the bottom of p. 5 of our notes, I want to give you another example, where an apparent pattern leads to wrong conclusions. We will return to this example later, when we actually study the *correct* formula. The example may be useful for teaching at school level, if you ever are in the situation.

Place a number n of points on the boundary of a disk and connect every two of them by straight lines. You should not place the points symmetrically, but in a somewhat irregular way, so that no three of the connecting segments you are drawing go through a common point. This is because we are going to count the number of domains into which the disk gets dissected, and if three lines go through one point, you "lose" a domain (namely the domain which would be a tiny triangle if the three lines didn't pass exactly through the same point, but only nearly). So now try it: for n points, what is the number of $D(n)$ of domains you get, for $n = 1, 2, 3, 4, 5 \ldots$?

n	1	2	3	4	5		
$D(n)$							

What formula for $D(n)$ are you inclined to guess from this data?

How many domains do you get for $n = 6$, $n = 7$?