

GMT Seminar 12th Mars.

Question 1. On p. 124, having established (15), we "easily check using the area formula that for any linear subspace [...]". To what do we apply the area formula, and why do we need to assume that $|\text{grad}(l^j)| \leq 1$?

Question 2. We have two versions of the main regularity theorem. In which way is the first better than the second, and vice versa?

Question 3. The second version of the regularity theorem guarantees the existence of a $\delta = \delta(n, k, p)$ such that the regularity statement holds, but gives no control over it. Is there any setting, apart from when $H = 0$, where this theorem can be applied without knowing more about the constant δ ?

Question 4. What does (2) in Theorem 23.1 say. Why is it important?

Question 5. The argument in the paragraph with equations (15)-(16) on page 124 is rather vague (at least to my very limited intellect). What is the geometry behind this argument?

Question 6. The entire chapter 5 is one big 27-page argument. The argument is very structurally complicated and draws freely on previous chapters. Try to make sense of the structure of the argument - how does the pieces fit together? What is the main idea of the argument?

Question 7. A bit late (though you have more than 11 hours to work on it :) but I wonder if alpha in the interval $(0, 1)$ really makes sense? The reason being that it seems that it would contradict the assumption $\theta^n \geq 1$. Therefore alpha in $(0, 1/2)$ seems more plausible. Note however that alpha of course then in is the interval $(0, 1)$ as well, but is this a consequence of sloppy writing or are there actual examples where $\alpha = 0.7385$ say?