

PMAT 505    ASSIGNMENT 1    Due September 29, 2010

1. Show that the complete graph  $K_7$  can be embedded in the torus  $T^2$ .  
[20]
2. Classify the letters of the (English) alphabet up to homeomorphism.  
As font use the standard keyboard font, as illustrated below. [20]  
A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z
3. Find a relatively simple formula for  $\text{span}(S^{n-1})$ , given the data in  
the lecture for  $n \leq 31$  and also  $\text{span}(S^{47}) = 8$ ,  $\text{span}(S^{63}) = 11$ ,  
 $\text{span}(S^{127}) = 15$ . [20]
4. Munkres p.20, 2 (a) - (e). [20]
5. Munkres p.29, 13. [20]