

1. **(4 pts Total)** Consider an $(n, k) = (32, 27)$ binary linear block code.
 - (a) **2 pts** Suppose we wish to do syndrome decoding. Determine the size (in bits) of table of coset leaders necessary for syndrome decoding.
 - (b) **2 pts** Suppose we wish to do “stupid” nearest-neighbor decoding. Determine the size (in bits) of the codebook necessary for ‘stupid’ nearest-neighbor decoding.
2. **(6 pts)** Check to see whether each of the following codes exists or not.
 - (a) **2 pts** A $(32, 27)$ code with $d_{min} = 10$.
 - (b) **2 pts** A $(7, 4)$ code with $d_{min} = 4$.
 - (c) **2 pts** A $(23, 22)$ code with $d_{min} = 2$.

[Hint: Check the Singleton, Plotkin, and Hamming bounds. Or check to see if it is one of the codes (repetition, Hamming, Extended Hamming or parity-check) you know.]