warm-up # 4
Math 392

Name: _____

Let $X_1, X_2, \ldots X_k \sim \chi^2_{n_i}, \quad i = 1, \ldots, k$, independently. Show that $X_1 + X_2 + \cdots + X_k = \sum_{i=1}^{k} X_i \sim \chi^2_{n_1+n_2+\cdots+n_k}$. (Hint: use moment generating functions.)