MAT631 PROBLEM SET 8

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Instructions. Please read the instructions on the course website carefully before submitting your solution(s).

Questions.

(1) **(Shubham)** Prove that
$$s_{1^n} = \sum_{k \geq n} \binom{k-1}{n-1} G_{1^k}.$$

(2) **(Anant)** Prove that
$$g_{1^n} = \sum_{k=1}^{n} \binom{n-1}{k-1} s_{1^k}.$$

(3) **(Anubhav)** Prove that
$$g_\lambda = \sum_{\mu \subseteq \lambda} f_\lambda^\mu s_\mu.$$

(4) **(Kanak)** Prove the following
  (a) $X_{K_n} = n! e_n$.
  (b) $X_{K_n^C} = e_{1^n} = h_{1^n} = m_{1^n}$.
  (c) If G_1 and G_2 are connected components of a graph G then $X_{G_1} X_{G_2} = X_G$.