

⑧ Let m, n , and r be non-negative integers.

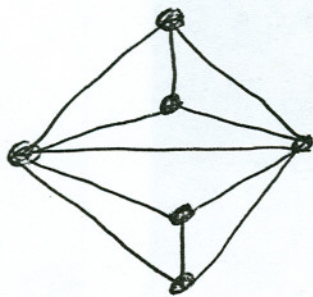
⑨ Which binomial coefficient is equal to $\sum_{k=0}^r \binom{n}{k} \binom{m}{r-k}$?

⑩ Prove that your answer to ⑨ is correct.

⑨ ⑨ Which binomial coefficient is equal to $\sum_{k=0}^r \binom{n+k}{k}$?

⑩ Prove that your answer to ⑨ is correct.

⑩ What is the chromatic number $\chi(G)$ of the following graph? Give a coloring using $\chi(G)$ colors. Explain why it is impossible to color using less than $\chi(G)$ colors.



87/E2/72