You can hand in one of the star problems before 10:15am on Thursday June 2nd.

1. Determine $R(P_3, P_3)$ and $R(K_{1,3}, K_3)$.

2. Show that any 2-coloring of the edges of $K_6$ contains at least two monochromatic triangles.

3. Show that there exists an $N$ such that if the integer box $\{(x, y) : 1 \leq x, y \leq N\}$ is 2-colored, then there is a monochromatic rectangle, i.e. a rectangle with all four corners the same color.

4. Prove that every 2-coloring of $K_n$ contains a monochromatic spanning tree.

5. Let $T$ be a tree with $t$ vertices. Prove that $R(K_s, T) = (s - 1)(t - 1) + 1$.

*6. Determine $R(K_3, K_{2,2})$ and $R(K_{2,2}, K_{2,2})$.

*7. Let $2K_3$ be the graph consisting of two disjoint triangles. Prove that $R(2K_3, 2K_3) = 10$. 