Problem 6

Idea

Let's see how to square a polynomial by hand and if we could see some pattern or anything we can work with.

$$
\begin{gathered}
(a+b+c+d+e+f)^2 \\
a^2 + ab + ac + ad + ae + af \\
+ba + b^2 + bc + bd + be + bf \\
+ca + cb + c^2 + cd + ce + cf \\
+da + db + dc + d^2 + de + df \\
+ea + eb + ec + ed + e^2 + ef \\
+fa + fb + fc + fd + fe + f^2
\end{gathered}
$$

Well, the answer to the question is to get the summation of the colored products and leave the squared ones. We can see that to compute the red products for example, we just need to compute only one summation of array products and multiply that by 2, and repeat that to the blue. cyan, orange, and grey arrays of products. That has a complexity of theta n^2 because in your loops you skip products like a^2 or b^2. It is not as efficient as to plug a number into a arithmetic series formula but it is cooler :"D