

Second Hint for Problem 365

You may have reached the point of assuming that $2^{k-1} > (k-1)^2$ and found yourself wondering how to prove that $2^k > k^2$. A natural thing to try is multiplying both sides of $2^{k-1} > (k-1)^2$ by 2. This ends up giving you $2^k > 2k^2 - 4k + 2$. Based on previous experience it is natural for you to expect to see how to turn this new right hand side into k^2 but not see how to do it. Here is the hint. You only need to show that the right hand side is greater than or equal to k^2 . For this purpose you need to show that one of the two k^2 s in $2k^2$ somehow balances out the $-4k$. See if you can figure out how the fact that you are only considering k s with $k > b$ can help you out.