a. Let $A = \{a_1, a_2, a_3, \ldots, a_n\}$. Then the $\sup A$ is the least upper bound of the set A which happens to contain n elements.

b. Another way to write the above is to write $\sup_n a_n$ instead of $\sup A$. The advantage of this new notation is that we do not need to give a name to the set $\{a_1, a_2, a_3, \ldots, a_n\}$.

c. Now let $B = \{b_n\}_{n=1}^{\infty}$. We have the following equivalent notations

$$\sup B = \sup_n b_n = \sup_n\{b_n\} = \sup\{b_n : n \in \mathbb{N}\}$$

d. Fill in the missing info in the second and third lines below.

(a) $\sup\limits_{8 \leq j < n} a_j = \sup\{a_8, a_9, a_{10}, \ldots, a_{n-1}\}$

(b) $\sup\limits_{n>4} b_n =$ ____________________

(c) ____________________ $= \sup\{b_k, b_{k+1}, b_{k+2}, \ldots\}$