1 Set Operations

Let $M = \{\alpha, 3, \gamma\}$, $N = \{\square, \gamma, \star, \circ\}$ and $K = \{\alpha, \{\alpha\}, M\}$. Please indicate the sets

1. $M \cap N$,
2. $M \cap K$,
3. $\mathcal{P}(M) \cap K$,
4. $M \setminus K$ and
5. $N \cup K$.

Solution:

1. $M \cap N = \{\gamma\}$
2. $M \cap K = \{\alpha\}$
3. $\mathcal{P} \cap K = \{\{\alpha\}, M\}$
4. $M \setminus K = \{3, \gamma\}$
5. $N \cup K = \{\square, \gamma, \star, \circ, \alpha, \{\alpha\}, M\}$