a)

$M_1 = \{ n^2 \mid n \in \mathbb{N} \wedge n^2 < 50 \}$

$M_2 = \{ n \mid n \in \mathbb{N} \wedge 10 < n < 20 \wedge (n \text{ ist ungerade}) \}$

$M_3 = \{ xyz \mid x, y, z \in \{1, 2, \dots, 8, 9\} \}$

$M_4 = \{ (\text{Vorspeise}, \text{Hauptgang}, \text{Dessert}) \mid \text{Vorspeise} = \text{Suppe} \wedge$
$\text{Hauptgang} \in \{\text{Fisch}, \text{Huhn}, \text{Tofu}\} \wedge \text{Dessert} \in \{\text{Eis}, \text{Pudding}\} \}$

$M_5 = \{ D \mid D \subseteq \{ \text{Ananassaft}, \text{Baileys}, \text{Orangesaft}, \text{Rum}, \text{Wodka} \} \}$

b)

$|M_1| = 8$ (weil $0^2, 1^2, 2^2, \dots, 7^2$ kleiner als 50 sind)

$|M_2| = 5$ (weil es 11, 13, 15, 17, 19)

$|M_3| = 729$ (weil $9^3 = 729$)

$|M_4| = 18$ (weil $2 * 3 * 3 = 18$)

$|M_5| = 6$ (weil es 6 verschiedene Getränke gibt)

c)

$M_1 = \{0, 1, 4, 9, 16, 25, 36, 49\}$

$M_2 = \{11, 13, 15, 17, 19\}$

$M_3 = \{123, 222, 999, \dots\}$

$M_4 = \{($ Suppe, Fisch, Eis$)$, $($ Suppe, Huhn, Eis$)$
, $($ Suppe, Tofu, Eis$)$, $\dots\}$

$M_5 = \{\{\}, \{$ Baileys$\}, \{$ Cola$\}, \dots\}$