NUM Ü1

3.) $\mathbb{F} = \mathbb{F}(2, 3, -1, 1) = \{0\} \cup \{(G \sum_{k=1}^{3} a_k 2^{-k}) \cdot 2^e : G \in \{-1, 1\}, a_k \in \{0, 1\}, a_1 = 1, e \in \mathbb{Z}, -1 \le e \le 1\}$

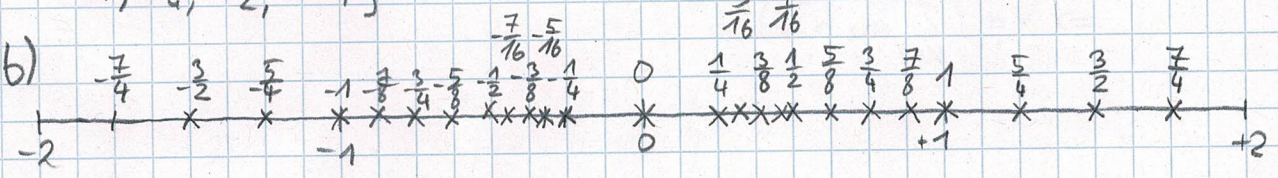
a) ges: alle Gleitkommazahlen aus $\mathbb{F}$

| $a_1$ | $a_2$ | $a_3$ | $\sum_{k=1}^{3} a_k 2^{-k}$ |
|---|---|---|---|
| 1 | 0 | 0 | $2^{-1}$ |
| 1 | 0 | 1 | $2^{-1} + 2^{-3}$ |
| 1 | 1 | 0 | $2^{-1} + 2^{-2}$ |
| 1 | 1 | 1 | $2^{-1} + 2^{-2} + 2^{-3}$ |

$\mathbb{F} = \{0,$
$\frac{1}{4}, \frac{5}{16}, \frac{3}{8}, \frac{7}{16},$
$\frac{1}{2}, \frac{5}{8}, \frac{3}{4}, \frac{7}{8},$
$1, \frac{5}{4}, \frac{3}{2}, \frac{7}{4},$
$-\frac{1}{4}, -\frac{5}{16}, -\frac{3}{8}, -\frac{7}{16},$
$-\frac{1}{2}, -\frac{5}{8}, -\frac{3}{4}, -\frac{7}{8},$
$-1, -\frac{5}{4}, -\frac{3}{2}, -\frac{7}{4}\}$

$\Rightarrow \{\sum_{k=1}^{3} a_k 2^{-k} : a_k \in \{0, 1\}, a_1 = 1\}$
$= \{\frac{1}{2}, \frac{5}{8}, \frac{3}{4}, \frac{7}{8}\}$

b)




c)