

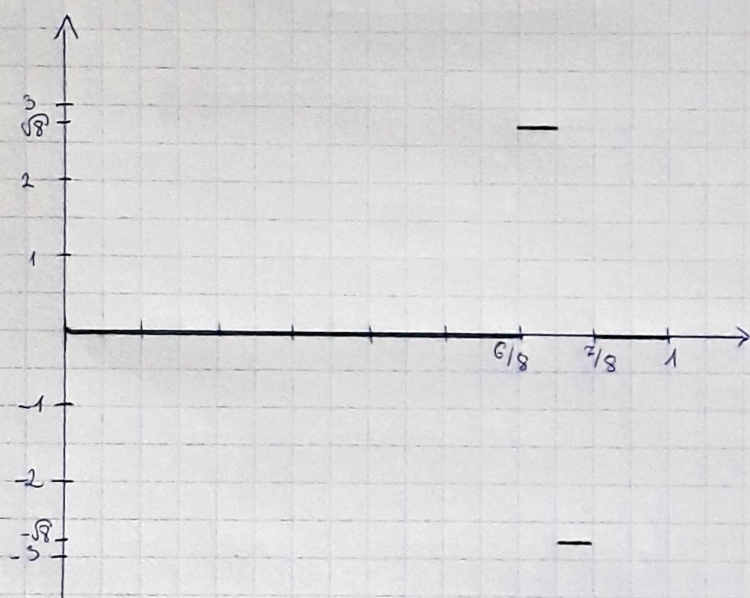
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HF<sub>1</sub>

$$H_{3,2} = ?$$

my birthday is Nov. 30.  $k = (30 \bmod 8) + 1 = 6 + 1 = 7$

$$H_{3,7}(x) = \begin{cases} \sqrt{8} & \text{if } \frac{6}{8} \leq x < \frac{6,5}{8} \\ -\sqrt{8} & \text{if } \frac{6,5}{8} \leq x < \frac{7}{8} \\ 0 & \text{otherwise} \end{cases}$$



HF<sub>2</sub>

$$r_0 = 1$$

$$r_2 = \begin{cases} 1 & \text{if } x \in (0, 0,25) \cup (0,5, 0,75) \\ -1 & \text{if } x \in (0,25, 0,5) \cup (0,75, 1) \\ 0 & \text{otherwise} \end{cases}$$

$$\begin{aligned} \langle r_0, r_2 \rangle &= \int_0^1 r_0 \cdot r_2 \, dx = \int_0^{0,25} 1 \, dx + \int_{0,25}^{0,5} (-1) \, dx + \int_{0,5}^{0,75} 1 \, dx + \int_{0,75}^1 (-1) \, dx = \\ &= \frac{1}{4} - \frac{1}{4} + \frac{1}{4} - \frac{1}{4} = \underline{\underline{0}} \Rightarrow \text{keys are orthogonal} \end{aligned}$$