

Chapter 5 — Exercises (Haar / Hadamard)

Gallier & Quaintance — workbook companion (core set)

Q1 (core). Using the 4×4 Haar change-of-basis idea in §5.1, compute the first averages and half-differences for the signal $v = (6, 4, 5, 1)$.

Show your working in the box below.

Working:

Q2 (core). State Proposition 5.2 (Sylvester) in your own words, then build H_4 from H_2 .

Working:

Q3 (stretch). Why does setting small Haar coefficients to zero still let you reconstruct a recognisable signal/image? Answer in 3–5 sentences.

Working:
