

①

several types of problems from Chapter 4

Definitions \leftarrow Make sure you know all of these.

① "Show the set U is a subspace of V "

\rightarrow see HW supp. ex. not in book

see General Thm 4.1.2 on p164.

(54) 7

② "Using Independence Extension (Lemma 4.2.2 on p167) and Span Preservation (Lemma 4.2.3 on p168)"

\rightarrow see (45) on p170,

S4-1 on p197,

S4-2 on p197-198.

(54) 8, 9, 10, 11

③

③a "Show the set S is linearly independent in V "

\rightarrow see lecture 41 (good starting place),
then see lecture 37,
comments.

S4-3

S4-4

S4-6

③b "Show the set S spans V "

\rightarrow see ③a (especially lecture 41 comments)

S4-5

S4-6

"

③c "Show the set S is a basis of V "

\rightarrow see ③a & ③b, S4-6, S4-7, especially lecture 41 comments.
see also lecture 40 comments.

(4) "Find $K_B(\vec{u})$ given \vec{u} "

→ see lecture 41 comments

(5) "Find \vec{u} given $K_B(\vec{u})$ "

→ see lecture 41 comments.

(6) Given a finite dimensional vector space V with finite basis X and a finite dimensional vector space W with finite basis Y and a linear transformation $F: V \rightarrow W$

(6a) find ${}_Y F_X$

→ see Def 81 on p186,

see lecture 40 comments (Examples),

see p188 example, see HW 9.

(S1) p188.

(S2) 2 p190

(S2) 3 p190

(S2) 4 p191

S4-10(a)

S4-11(a), S4-14

S4-18, S4-19, S4-20

(6b) suppose S is also a basis of V
suppose T is also a basis of W
find change of basis matrices:

(i) ${}_X I_S$

(ii) ${}_T I_Y$

AND

Know how to use them

ie., which ones do you need to find

(i) ${}_Y F_S$

(ii) ${}_T F_X$

(iii) ${}_T F_S$

→ see p194
see lecture 40 comments (Example)
see HW 9.

S4-10

S4-13

S4-15

S4-16, S4-17, (S4) 1 and 6

(6c) Find a basis for the kernel of F

↳ see HW 9,

S4-11 (b)

S4-12
(54)5

(6d) Find a basis for the image of F

↳ see HW 9,

S4-11,

S4-12

(54)5

(Also you should
know how to find
 $\ker(F)$)

(Also you should
know how to find
 $\text{im}(F)$)

(7) Many other problems.

↳ (54) 2, 3, 4 etc.

SAMPLE EXAMS