

# TW 314 (Toegepaste Diskrete Wiskunde)

## Tutoriaal 8: 30 Maart 2017

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1. Laat  $C$  die deelruimte van  $V(5, 2)$  wees met voortbringerversameling  $\{(1, 1, 0, 1, 1), (1, 0, 0, 1, 0), (1, 0, 1, 1, 0)\}$ .
    - (a) Vind 'n basis vir  $C$ .
    - (b) Wat is  $\dim(C)$ ?
    - (c) Hoeveel vektore bevat  $C$ ?
    - (d) Lys die vektore van  $C$ .
  
  2. Laat  $C$  die deelruimte van  $V(4, 7)$  wees met voortbringerversameling  $\{(5, 2, 2, 3), (3, 4, 1, 2), (2, 2, 0, 4), (6, 0, 4, 5)\}$ .
    - (a) Vind 'n basis van  $C$ .
    - (b) Wat is  $\dim(C)$ ?
    - (c) Hoeveel vektore bevat  $C$ ?
  
  3. Beskou die deelversameling  $C = \{(3, 4, 1), (1, 3, 2), (4, 2, 3), (0, 0, 0), (2, 1, 4)\}$  van  $V(3, 5)$ .
    - (a) Bepaal of  $C$  'n deelruimte van  $V(3, 5)$  is.
    - (b) Toon aan dat  $C$  ekwivalent is aan die 5-êre repetisiekode van lengte drie.
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# TW 314 (Applied Discrete Mathematics )

## Tutorial 8: 30 March 2017

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1. Let  $C$  be the subspace of  $V(5, 2)$  with generator set  $\{(1, 1, 0, 1, 1), (1, 0, 0, 1, 0), (1, 0, 1, 1, 0)\}$ .
    - (a) Find a basis for  $C$ .
    - (b) What is  $\dim(C)$ ?
    - (c) How many vectors does  $C$  contain?
    - (d) List the vectors of  $C$ .
  
  2. Let  $C$  be the subspace of  $V(4, 7)$  with generator set  $\{(5, 2, 2, 3), (3, 4, 1, 2), (2, 2, 0, 4), (6, 0, 4, 5)\}$ .
    - (a) Find a basis for  $C$ .
    - (b) What is  $\dim(C)$ ?
    - (c) How many vectors does  $C$  contain?
  
  3. Consider the subset  $C = \{(3, 4, 1), (1, 3, 2), (4, 2, 3), (0, 0, 0), (2, 1, 4)\}$  of  $V(3, 5)$ .
    - (a) Determine whether  $C$  is a subspace of  $V(3, 5)$ .
    - (b) Show that  $C$  is equivalent to the 5-ary repetition code of length three.
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