

1. The vector  $v = (6, 3, 5, 7, 7)$  can be written as  $v = c_1v_1 + c_2v_2 + c_3v_3 + c_4v_4$ , where  $\{v_1, v_2, v_3, v_4\}$  is the orthogonal set with

$$v_1 = (1, 0, 1, 0, 1), v_2 = (0, 1, -1, 1, 1), v_3 = (-1, 0, 1, 1, 0), \text{ and } v_4 = (1, 0, 0, 1, -1),$$

Then,  $(c_1, c_2, c_3, c_4) =$

- A.  $(2, 3, 2, 2)$
- B.  $(6, 3, 2, 2)$
- C.  $(6, 2, 3, 3)$
- D.  $(2, 3, 3, 2)$
- E.  $(2, 6, 3, 2)$
- F.  $(6, 6, 2, 2)$

2. Which one of the following is a basis for the subspace  $\{(x, y, z) \mid x - y + z = 0\}$  of  $\mathbb{R}^3$  ?
- A.  $\{(3, 0, -3)\}$
  - B.  $\{(1, 0, 0), (1, 2, 1)\}$
  - C.  $\{(1, 0, 0), (0, 1, 0), (0, 0, 1)\}$
  - D.  $\{(1, 2, 1)\}$
  - E.  $\{(1, 1, 0), (-1, 0, 1)\}$
  - F.  $\{(-3, 0, 3), (1, 0, 0)\}$