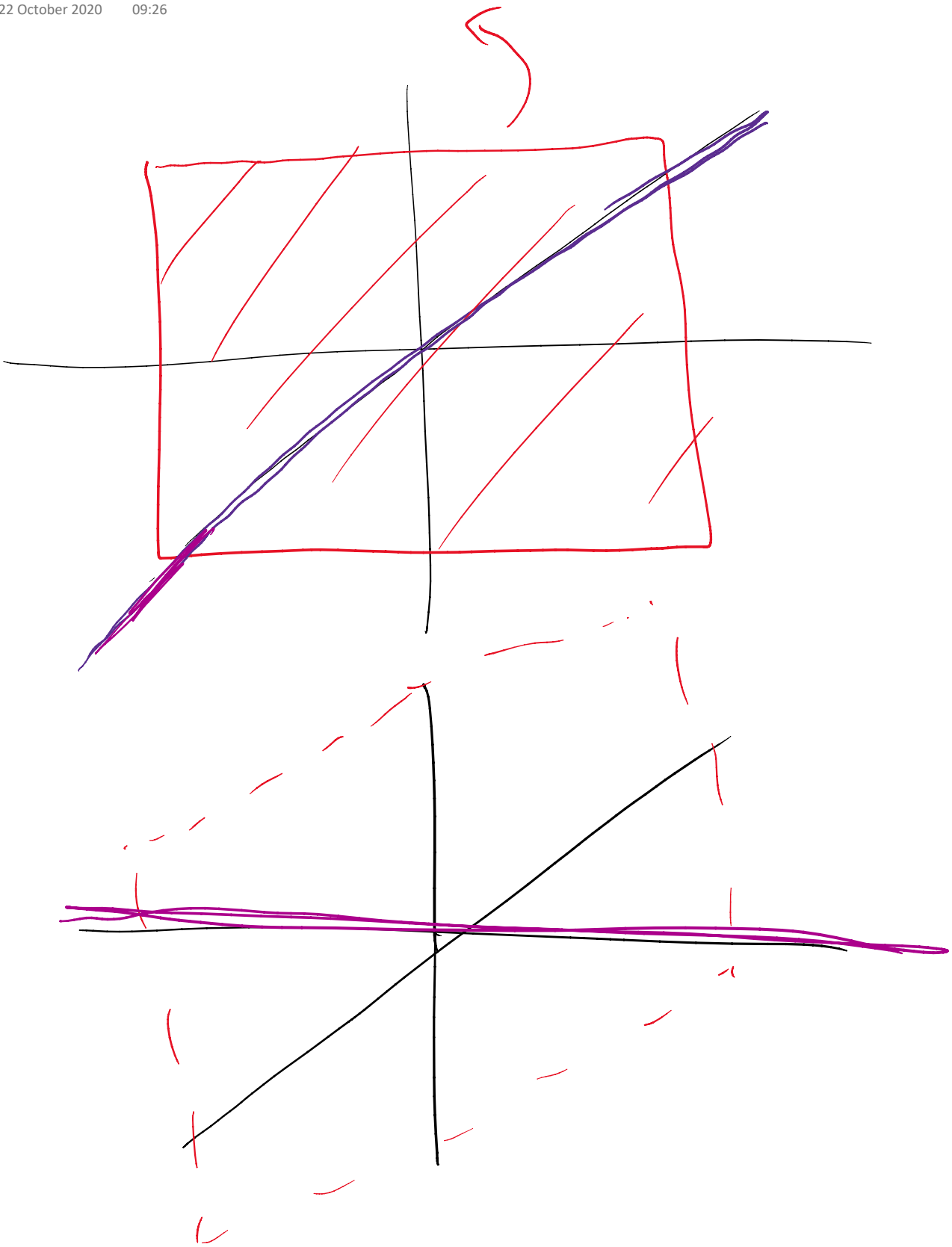


Consultation II

22 October 2020 09:26



$$\{0, 1\}_r \cdot 1^+ \pmod 2$$

r s

✓

$$s \in \{0, 1\}. \quad z \bmod 2 = 0$$

$$s \in \{0, 1, \dots, q-1\} \quad \text{if } q \text{ is a prime}$$

$$+ \cdot \bmod q$$

$$W = C + e$$

$$WH^T = CH^T + eH^T = eH^T \text{ - Syndrome}$$

syndromes \Leftrightarrow errors

$(n, k, 2t+1)$ -code

$$e_1, e_2, w(e_1) \leq t, w(e_2) \leq t$$

$$\text{then } e_1 H^T \neq e_2 H^T$$

errors - syndromes $u + c$

u	$u + c$					
000...0	c_1	c_2	c_3	c_4	...	c_{2^k}
000...1	$c_1 + 00001$	$c_2 + 00001$	$c_{2^k} + 00001$

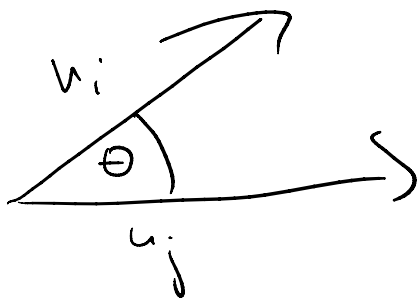


$$\vec{u}_n = (v_0, v_1, \dots, v_{n-1}) \quad v_i \in \mathbb{R}$$

$$|\vec{u}_i| = 1 \quad \sqrt{\sum_i v_i^2} = 1$$

$$\vec{u}_i \cdot \vec{u}_j = (v_{i0} \cdot v_{j0} + v_{i1} \cdot v_{j1} + \dots + v_{i,n-1} \cdot v_{j,n-1})$$

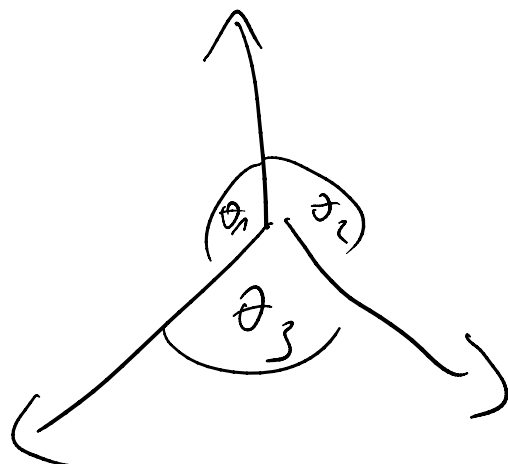
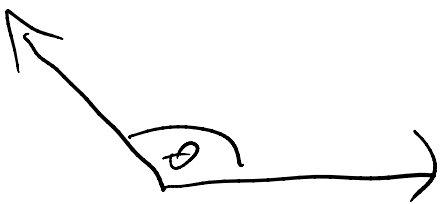
$$\vec{u}_i \cdot \vec{u}_j \leq 0$$

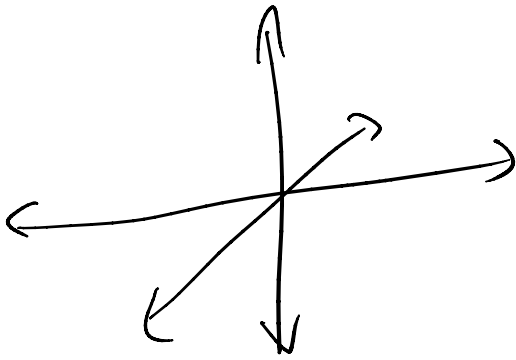
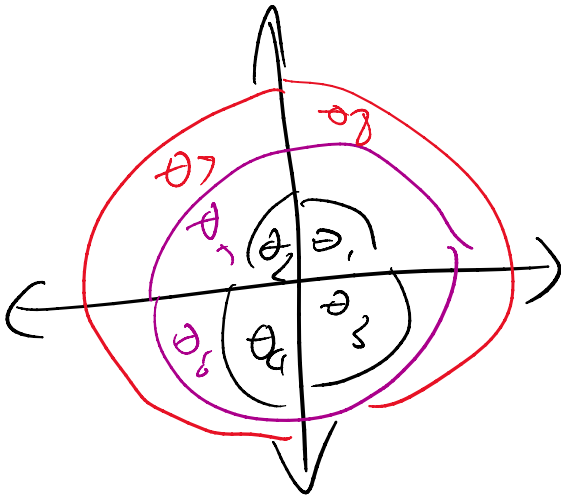


$$\vec{u}_i \cdot \vec{u}_j = \frac{\cos \theta}{|\vec{u}_i| \cdot |\vec{u}_j|} = \cos \theta$$

$$\Downarrow$$
$$\cos \theta \leq 0$$

$$\theta \in [90^\circ, 180^\circ]$$





over $\mathbb{F}_3 = \{0, 1, 2\}, +, \cdot \text{ mod } 3$

a.) $\left(\begin{array}{ccccc} & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \end{array} \right) \Leftrightarrow \left(\begin{array}{ccccc} 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 & 0 \end{array} \right)$

permutation equivalent

b.) $\left(\begin{array}{c} \downarrow \\ \downarrow \\ \downarrow \\ \downarrow \\ \downarrow \end{array} \right) \begin{array}{l} \text{permutation equivalent} \\ \text{equivalent} \end{array}$

$$\left(\begin{array}{ccccc} 1 & 0 & 1 & 1 & 0 \\ 0 & 2 & 0 & 1 & 1 \end{array} \right)$$