Kahoot!

# MATB24 TUT5 Summer 2021, Kahoot#1

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**A public kahoot**

**Questions (19)**

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1 - Quiz

**Let V be a vector space, v, w be vectors in V and $k_1$, $k_2$ be scalar in the field. The definition of V.S did not said ...** 60 sec

- ▲ v+w=w+v ✗
- ◆ $k_1(w+v)=k_1w+k_1v$ ✗
- ● vw=wv ✓
- ■ $k_1k_2w = k_2k_1w$ ✗

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2 - Quiz

**Let S = {v1, ..., vn} be a linear independent set, which of the following statement is incorrect?** 60 sec

- ▲ The equation a1v1+...+anvn=0 has only the trivial solution with all ai = 0 ✗
- ◆ Then we know that a1v1+...+anvn = 0 and a1 = ... = an = 0 ✓
- ● None of the vi can be written as linear combination of the other vectors. ✗
- ■ If one of the ai is not equal to 0, then a1v1+...+anvn=0 can not be true ✗

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3 - True or false

**If {v,w} is a basis of a given a vector space V, then {kv, w} is also a basis for any scalar k.** 20 sec

- ▲ True ✗
- ◆ False ✓

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4 - True or false

**A set of vectors is linearly dependent if and only if one of the vector is a scalar multiple of another one vector** 20 sec

- ▲ True ✗
- ◆ False ✓

5 - True or false

**If T is a linear transformation from V to W, then there exists a matrix A, such that T(v)=Av for any v in V.**

20 sec

- True ✗
- False ✓

6 - True or false

**If T is a linear transformation from $R^n$ to $R^m$, then there always exists a matrix A, such that T(v) = Av for all v in $R^n$**

20 sec

- True ✓
- False ✗

7 - True or false

**If AB is invertible, then A is invertible and B is invertible**

20 sec

- True ✗
- False ✓

8 - True or false

**If AB is invertible, then A is invertible or B is invertible**

20 sec

- True ✗
- False ✓

9 - Quiz

**Let S = {v1, ..., vn} be a spanning set of the vector space V. Let v be a vector in V. It is not necessarily true that..**

60 sec

- {v1, ..., vn, v} must be a linearly dependent set ✗
- v = a1v1 + ... + anvn for some a1, ..., an in the field. ✗
- Only one way to represent v as a linear combination of the vectors in S ✓
- span(S) is a subset of V ✗

10 - Quiz

**Let T be a linear transformation from V to W, which of the following is not correct** 60 sec

- $T(0_V) = 0_W$ ✗
- T(v+w) = T(v) + T(w) for all v and w in V ✗
- T(kv) = T(k)T(v) for all scalar k in the field and vector v in V ✓
- For every v in V, there is only one unique T(v) ✗

11 - True or false

**Let V be a vector space and let v,w be vectors in V, let k be a scalar. Then if kv=kw, then v=w** 20 sec

- True ✗
- False ✓

12 - True or false

**A vector space may have more than one zero vector** 20 sec

- True ✗
- False ✓

13 - True or false

**If a set contains the zero vector, then it must be linearly dependent.** 20 sec

- True ✓
- False ✗

14 - True or false

**v1, ..., vn are linearly independent directly said a1v1+...+anvn=0 for some scalars a1, ..., an.** 20 sec

- True ✗
- False ✓

15 - True or false

**Assume a1v1+a2v2+a3v3=0 and v1,v2 are linearly independent, then a1v1+a2v2=0** 20 sec

- True ✗
- False ✓

16 - True or false

**Known $M_4(R)$ is a vector space. The zero vector is the 4x4 matrix with all zero entries.** 20 sec

- True ✓
- False ✗

17 - True or false

**Known $M_4(R)$ is a vector space. In the definition, one of the axiom said 1v=v. The 1 here is the 4x4 identity matrix.** 20 sec

- True ✗
- False ✓

18 - Quiz

**Known V = $P_4(R)$ is a vector space, which of the following statement is correct?** 60 sec

- 1+x is not a vector in V because it has only degree 1 ✗
- {1 , x} are linearly dependent vectors in V because we can pick x=-1 ✗
- V has dimension 4, i.e. if S is a basis of V, then S has 4 elements. ✗
- {1, 1+x, $1+x+x^2$, $1+x+x^2+x^3$, $1+x+x^2+x^3+x^4$} is a spanning set of V ✓

19 - Quiz

**Consider the set of all complex number as a real vector space, call it V, which of the following statement is correct?** 60 sec

- The scalars are complex numbers ✗
- {1, i} are linearly independent vectors in V ✓
- The zero vector in the definition of vector space is 0+i in V ✗
- {1} is a spanning set of V ✗

# Resource credits

**Description:** **Imgorthand/E+/Getty Images**