姓名: SOLUTION　　葉均承　　應數一線性代數

學號: _____　　**Quiz 11**　　考試日期: 2023/12/06

不可使用手機、計算器，禁止作弊!

1. Let P_4 is the set contains all polynomial in x with degree equal to 4. Determine whether P_4 is a vector space or not.

   Answer: Is P_4 a vector space?: (Yes / $\boxed{No}$) .

2. Determine whether the given set S of vectors is dependent of independent. Then reduce the given set to be a basis for $sp(S)$.

   $$S = \{1, e^x + e^{-x}, e^x - e^{-x}\} \text{ is a subset in a vector space } P.$$

   Answer: Is S independent: ($\boxed{Yes}$ / No) .

   The basis for $sp(S)$ is $\{1, e^x + e^{-x}, e^x - e^{-x}\}$

Circle each of the following True or False. Please give a counterexample （反例）for the false statement and give an explain （解釋）for the true statement.

3. True **False** No vector is its own additive inverse.

4. **True** False Every vector space has at least one vector.

5. **True** False Every vector space with a nonzero vector has at least two distinct subspaces.