姓名: SOLUTION 葉均承 應數一線性代數

學號: _____ **Quiz 8** 考試日期: 2020/12/03

1. 請框出答案. 2. 不可使用手機、計算器，禁止作弊!

1. $T : F \to \mathbb{R}$ defined by $T(f) = f(-4)$, where f is the vector space of all functions mapping $\mathbb{R}$ into $\mathbb{R}$. Determine whether T is a linear transformation and find its kernel.

   (a) $T(f+g) = (f+g)(-4) = f(-4) + g(-4) = T(f) + T(g)$.

   (b) $T(rf) = (rf)(-4) = r(f(-4)) = r(T(f))$.

   Thus T is a linear transformation. The kernel of T is $\{f \mid f(-4) = 0\}$, the set of function is F with x-intercept at -4.

   P.S. Since the kernel is not $\{0\}$, T is not invertible.