

1. 請框出答案. 2. 不可使用手機、計算器，禁止作弊!

1. Find the coordinate vector of the given vector relative to the indicated ordered basis.  
 $3x^2 + 13x - 1$  in  $P_2$  relative to  $(x^2 + 3x - 2, 4x^2 + x + 3, -x^2 + 2x)$

$$\left[ \begin{array}{ccc|c} 1 & 4 & -1 & 3 \\ 3 & 1 & 2 & 13 \\ -2 & 3 & 0 & -1 \end{array} \right] \sim \left[ \begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 3 \end{array} \right]$$

**Answer: the coordinate vector is  $[2, 1, 3]$**