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.

   $2x^3 + 3x^2 + 5x + 3$ in P_3 relative to $(x, x^2 - 1, x^3 + x, 2x^2 + 1)$

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

   Solution：

$$
\left[\begin{array}{cccc|c}
0 & 0 & 1 & 0 & 2 \\
0 & 1 & 0 & 2 & 3 \\
1 & 0 & 1 & 0 & 5 \\
0 & -1 & 0 & 1 & 3
\end{array}\right]
\sim
\left[\begin{array}{cccc|c}
1 & 0 & 0 & 0 & 3 \\
0 & 1 & 0 & 0 & -1 \\
0 & 0 & 1 & 0 & 2 \\
0 & 0 & 0 & 1 & 2
\end{array}\right]
$$