

**Problem 1**

Determine if the polynomial  $3x^2 + 2x - 1$  is in the span $\{x^2 + x - 1, x^2 - x + 2, 1\}$ .

**Problem 2**

Determine if the vectors  $\left\{ \begin{bmatrix} -1 \\ 2 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \end{bmatrix} \right\}$  span  $\mathbb{R}^2$ .

### Problem 3

Determine if the vectors  $\left\{ \begin{bmatrix} -1 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 2 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 2 \end{bmatrix} \right\}$  span  $\mathbb{R}^3$ .

### Problem 4

Determine if the vectors  $\left\{ \begin{bmatrix} -1 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix} \right\}$  span  $\mathbb{R}^3$ .