

Name:

Problem 1: The set

$$S = \{x^2 - x + 1, 2x + 1, 2x - 1\}$$

is a basis for the vector space \mathcal{P}_2 of polynomials of degree less than or equal to 2.

To show this, you would have to check that two conditions are satisfied. Write down what these two conditions are, and what system of linear equations you would solve to check these conditions (including what you would need the outcome to be).

You **do not** have to solve the equations.