

Name:

1. Let $x = (x_1, x_2, x_3)$. The vector y is determined from x according to

$$y_1 = x_1 - x_2$$

$$y_2 = x_2 - x_3$$

$$y_3 = x_3 - x_1$$

Determine a matrix A (where all entries of A are numbers) such that $y = Ax$.

2. Suppose the 4-vector c gives the coefficients of a cubic polynomial $p(t) = c_1 + c_2t + c_3t^2 + c_4t^3$. Express the conditions

$$p(0) + p'(0) = 0$$

$$p(1) + p'(1) = 0$$

as a set of linear equations of the form $Ac = b$. Give the sizes of A and b , as well as their entries.