

Linear. Quiz 5. Name _____ Time _____

Consider the following sets of polynomials in \mathcal{P}_2 .

$$\mathcal{A} = \{x - 1, x, x^2 + 1\}, \mathcal{B} = \{3x^2, x, x + 2, 3\}, \mathcal{C} = \{3x^2, x^2 - 1, x + 2\},$$

$$\mathcal{D} = \{3x^2, x + 2\}, \mathcal{F} = \{x^2, x + 2, 3x^2 + 3x + 6\}$$

(1) Which two are lin. dep.?

(2) Which two do not span \mathcal{P}_2 ?

(3) Which two are bases for \mathcal{P}_2 ?

(4) For both bases you just found, in alphabetic order, find the coordinate vector for $5x^2 + 7x$.
(Two answers.)

(5) These five lines are described by a matrix equation $A\mathbf{x} = \mathbf{b}$.

Does $\mathbf{b} = \mathbf{0}$? _____

Does a solution \mathbf{x} exist? _____

Are the columns of A lin. indep. or lin. dep.? _____

Are the rows of A a basis? _____