QUIZ 3 FOR MATH 304-06, 10/7 YOUR NAME _____

Here are three polynomials in $\mathbb{P}_3$:

$$p(t) = t^3 - 3t^2 + 4t,$$
$$q(t) = t^3 + 4t^2 + t,$$
$$r(t) = 2t^3 + 15t^2 - t.$$

(1) (10 points) Prove they are linearly dependent. Find a linear dependence relation that they satisfy.

(2) (5 points) Use your answer to question (1) to express one of the polynomials as a linear combination of the other two.

(3) (10 points) Find a largest linearly independent subset of $\{p(t), q(t), r(t)\}$; explain why it is independent and largest.