

**Math 317 Section B1 Quiz 10 (with solution)**

April 19, 2002

**Problem 1.**

Consider the polynomials  $g = 2x^4 + 5x^3 - 2x - 5$  and  $f = 2x^4 + 4x^3 - 2x - 4$  in  $\mathbb{R}[x]$ .

Use the Euclidean algorithm to find  $d = \gcd(f, g) \in \mathbb{R}[x]$ .

**Solution.**

We have:

$$2x^4 + 5x^3 - 2x - 5 = 1 \cdot (2x^4 + 4x^3 - 2x - 4) + x^3 - 1$$

$$2x^4 + 4x^3 - 2x - 4 = (2x + 4)(x^3 - 1) + 0.$$

Therefore  $\gcd(f, g) = x^3 - 1$ .