

**Math 317 Section B1 Quiz 9**

April 12, 2002

**Problem 1.**

Give an example of two polynomials of positive degree  $f, g \in \mathbb{Z}_6[x]$  such that

$$\deg(fg) = \deg(f) + \deg(g) - 1.$$

**Solution.**

For example, take  $f = [2]x$  and  $g = [1] + [3]x$ . Then  $\deg(f) = \deg(g) = 1$ . However:

$$fg = [2]x([1] + [3]x) = [2]x + [6]x^2 = [2]x,$$

so that  $\deg(fg) = 1 = 1 + 1 - 1$ , as required.