

## Recommended Problems

## Problem 1 (DF, Problem 7, p. 455)

Let  $R = \mathbb{Z}[x, y]$  and let  $I = (x, y)$ . Define a map

$$\phi(ax + by, a'x + b'y) = ad - bc \pmod{I}.$$

Prove that this is a well defined alternating map from  $I \times I \rightarrow \mathbb{Z}$ .

## Problem 2 (DF, Problem 12, p. 455)