

MATH 5399-001
MACUALAY 2 HOMEWORK SET 1

Before Midnight on 31 January send me a Macaulay 2 file (extension m2) with the commands to perform the following:

- (1) Define the ring $R = \mathbb{Q}[X, Y]$.
- (2) Define the ideal $I = \langle X^2 - Y^2 - 3, 2X^2 + 3Y^2 - 11 \rangle$.
- (3) Ask for the minimal generators of I .
- (4) Check if $I = \langle X^2 - 4, Y^2 - 1 \rangle$.
- (5) Define the ideal $J = \langle Y^2 - X \rangle$.
- (6) Find $I + J$.
- (7) Find $I \cap J$.
- (8) Find IJ .