Spring 2020, Math 621: Preliminary Problem Set 2
Due: Thursday, February 6th, 2020
Graded Rings and Modules

Preliminary problems. These problems should be completed before discussion on Thursday.

(P1) Let $I = \langle x^2, y \rangle \subset R = \Bbbk[x, y]$, under the standard grading. Find the following values of the Hilbert function $\mathcal{H}(I; t)$, and in each case, find a basis for I_t.

(a) $\mathcal{H}(I; 1)$

(b) $\mathcal{H}(I; 2)$

(c) $\mathcal{H}(I; 3)$

(d) $\mathcal{H}(I; 0)$