

Fall 2022, Math 621: Preliminary Problem Set 8
Due: Thursday, March 17th, 2022
Hilbert Series and Hilbert's Theorem

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

(P1) Find a rational expression for the Hilbert series $\text{Hilb}(R; z)$ of each of the following rings R .

(a) $R = \mathbb{k}[x, y]$ with $\deg(x) = \deg(y) = 2$.

(b) $R = \mathbb{k}[x, y]/\langle xy \rangle$ with $\deg(x) = \deg(y) = 2$.