Week 2 • Problem Set 3 • Koszul duality

Quick Problem:

What do the following modules get sent to under the Koszul duality functors L and R?

Note: Modules are thought of as complexes sitting in degree 0.

(a) k

(b) the ring itself (R or $R^!$, as appropriate)

Use this to explain why k and R generate the triangulated subcategories $D^{\mathrm{fl}}(R^!)$ and $D^{\mathrm{perf}}(R)$, respectively (that is, allowing cones/extensions, etc).

Use this to explain how BGG can be derived from Koszul duality.

Problems: **No problem session today – excursion to SLMath**