Algebraic Topology **Exercise Sheet 12**

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Question 1:

Let K be any triangulation of Δ_n, and let $g\colon K \to \Delta_n$ be a simplicial approximation to the identity. Show that the number of simplices of K that map onto Δ_n is odd. (Hint: g must carry $\partial\Delta_n$ into itself.)

Question 2:

Triangulate S^2 via the central projection of a regular tetrahedron T inscribed in S^2. Show that there is no simplicial approximation $T \to T$ (without subdividing) to the antipodal map.