MATH 521 Project Report
Review of Weak Galerkin Finite Element Method

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Using arbitrary shapes of polygons or polyhedra for meshes in Finite Element Analysis (FEA) is particularly beneficial in situations requiring complex geometrical representations or when dealing with highly irregular domains. This flexibility allows for a more accurate approximation of curved or complex boundaries, improving the quality of the simulation without significantly increasing the computational cost. It's especially useful in adaptive mesh refinement processes where the mesh needs to evolve based on solution characteristics, allowing for efficient targeting of areas with high error or where finer resolution is needed to capture critical phenomena accurately.