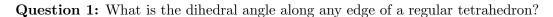
Scissors Congruence in 3D

MATH 261 Computational Geometry

Let P be a polyhedron and let e be an edge of P. The **dihedral angle** at edge e is the interior angle between the two faces of P that intersect along edge e.



Let $f: \mathbb{R} \to \mathbb{Q}$ be any function such that:

- (a) f(x+y) = f(x) + f(y) for all $x, y \in \mathbb{R}$,
- (b) f(qx) = qf(x) for all $q \in \mathbb{Q}$ and $x \in \mathbb{R}$,
- (c) $f(\pi) = 0$.

Question 2: If θ is any rational multiple of π , then what can you say about $f(\theta)$?

For any edge e of a polyhedron, let $\ell(e)$ be the length of e and $\phi(e)$ the dihedral angle at e. Call $\ell(e) \cdot f(\phi(e))$ the **mass** of edge e.

The **Dehn invariant** of a polyhedron P is ______.

