Read Chapters 15 and 16 from the text book.

1. Chapter 15: Exercises 6, 9, 12.

2. Chapter 16: Exercises 5, 8, 10, 18.

3. Let \((X, d_X)\) and \((Y, d_Y)\) be two Gromov hyperbolic proper geodesic metric spaces. Show that a quasi-isometry \(f: X \to Y\) induces a homeomorphism \(f_*: \partial X \to \partial Y\) between their Gromov boundaries.

4. Prove \(\mathbb{Z}^2\) is not quasi-isometric to \(\mathbb{Z}\).

5. Find an example of an infinite group whose abelianization is the trivial group.