
Problem 1. *Draw the points $(0, 2)$ and $(2, 0)$ in the plane. Compute the distance between them and draw a geodesic using each of the following metrics: Euclidean, taxicab, Paris (make sure to label the geodesics).*

Problem 2. *What's the difference between a circle and a disk? Illustrate in Euclidean geometry.*

Problem 3. (a) Draw two intersecting disks in Euclidean geometry. What does their intersection look like? Is it a basic geometric object (like a square, disk, etc)?

(b) Draw a taxicab-disk centered at the point $(1, 2)$ with radius 2; and another centered at $(5, 2)$ with radius 3. Shade in their intersection.

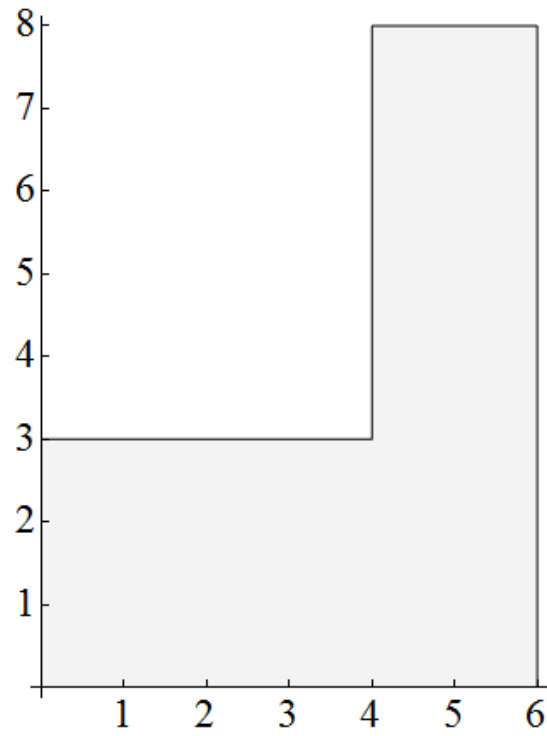
(c) What shape do you get (in terms of taxicab geometry)? Is it a basic geometric object in taxicab geometry?

(d) Draw two taxicab-disks that intersect but don't form the same shape as in (b).

Problem 4. *In the Paris metric, draw a disk of radius 2 centered at the point $(1, 0)$.*

Problem 5. *Draw a Euclidean triangle. In a different picture (or using a different color), draw a taxicab triangle with the same vertices. Repeat with the Paris metric.*

Problem 6. Consider the following hallway:



(a) Compute the hallway distance from the point $(0,0)$ to the point $(4,6)$.

(b) Draw (on the picture) a hallway-disk of radius 3 centered at the point $(3,3)$.