

EXERCISES RELATED TO history12.pdf

As in the earlier exercises, “Burton” refers to the Seventh Edition of the course text by Burton (the page numbers for the Sixth Edition may be off slightly).

Additional exercises

1. The corner of a large lot is to be fenced in with a linear fence of length L (see [math153exercises12a.pdf](#) for a drawing), producing a triangular enclosure in the corner. Show that the area of this triangular enclosure is maximized when L is the hypotenuse of an isosceles right triangle.

2. In the same setting, suppose we can take the fence in the preceding exercise and bend it to form a right angle, producing a rectangular enclosure in the corner. What is the maximum area that can be enclosed, and what is the ratio of the lengths of the two straight sides of the fence? How does the maximum area in this case compare to the maximum area in the first exercise?

3. Now assume we have two rigid pieces of linear fencing, both of which have length L , and we enclose a triangular region on one of the sides of the large lot. Show that the maximum area is enclosed when the two fence pieces are perpendicular.