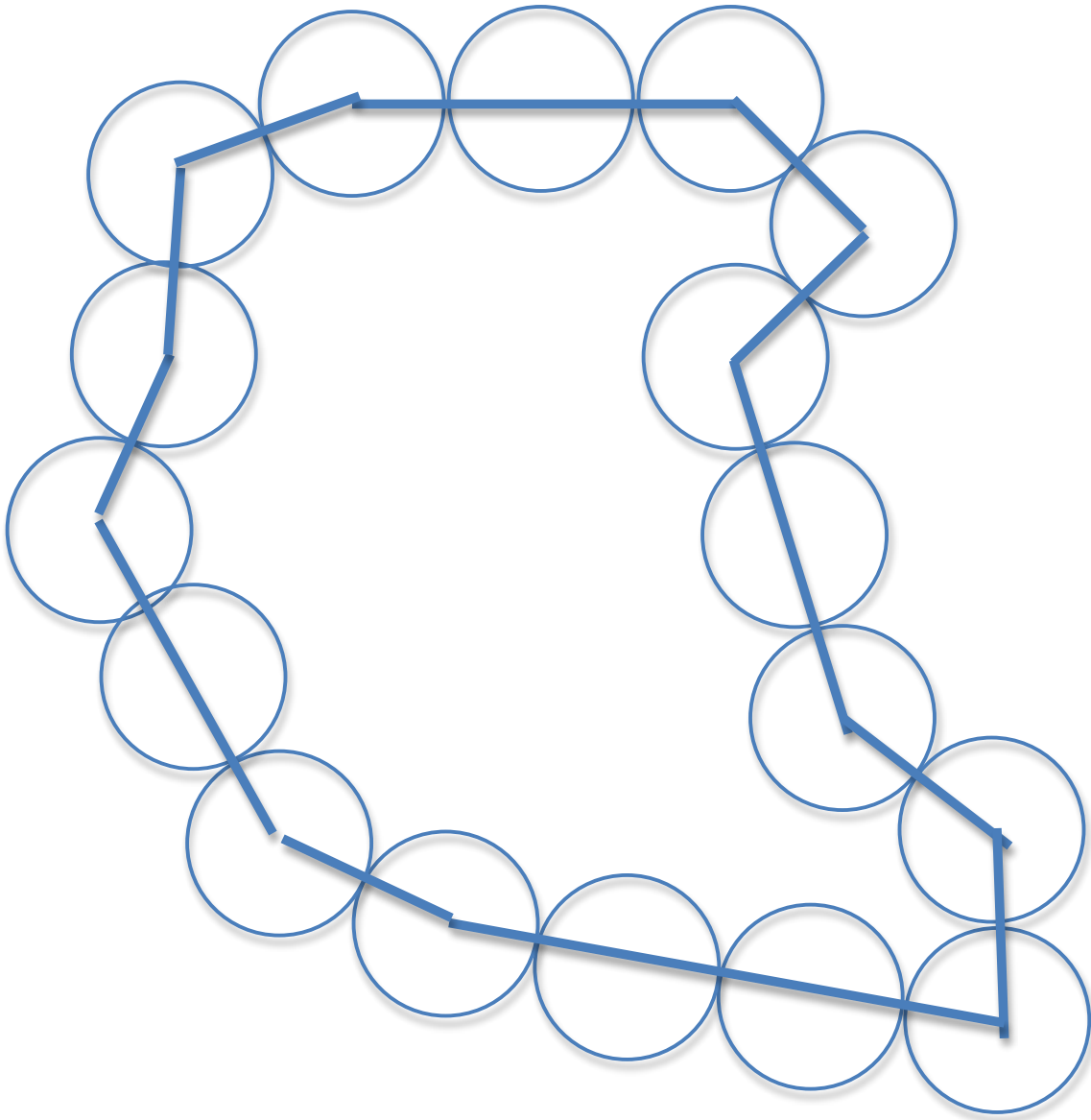


Problem of the Week September 20, 2011



A bunch of circles, all with radius 1, are arranged in an irregular loop, each touching the one before and the one after. Of course, the line segments connecting the centers of the circles make an irregular polygon. As you can see from the example shown above, a portion of each circle is inside the polygon and a portion is outside. Visibly, the portions are not the same in each circle. Find the difference:

$$(\text{Area outside the polygon}) - (\text{Area inside the polygon})$$

Note: if you have a bunch of disks, you can experiment!