Problem 241
by Benjamin Bloch, Ph.D.

(Diagram not drawn to scale)

Given right triangles ABE and ACD, where every point on arc EC is equidistant from point A, AE = r and angle DAC = θ (this is the same diagram as in problem 237):

1. For what angle θ is the area of triangle ABE a maximum?
2. What is the maximum area of triangle ABE in terms of r?

Problem 242
by David Lindell, LS

The squares in (a) are one unit on a side. The equilateral triangles in (b) are one unit on a side. The circles in (c) are unit radii. (All are drawn to different scales.) What are the circumcircle radii?