



preserved property under scaling: ratio of black/total area

$$s(R_1, R_2) = \frac{8R_1(R_2 - R_1) + \pi \frac{R_2^2 - R_1^2}{2}}{2R_2(4R_1 + R_2)} = s(\alpha R_1, \alpha R_2) = \frac{8R_1(R_2 - R_1) + \pi \frac{R_2^2 - R_1^2}{2}}{2R_2(4R_1 + R_2)}$$

non-preserved property under scaling: ratio of black area/sum of width and height

$$r(R_1, R_2) = \frac{8R_1(R_2 - R_1) + \pi \frac{R_2^2 - R_1^2}{2}}{4R_1 + 3R_2} \neq r(\alpha R_1, \alpha R_2) = \frac{\alpha(8R_1(R_2 - R_1) + \pi \frac{R_2^2 - R_1^2}{2})}{4R_1 + 3R_2}$$