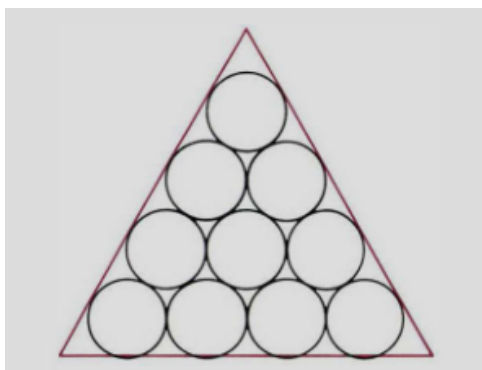


Let n be the number of rows of equal-size circles packed into an equilateral triangle, where each circle fills up as much space as possible while lying tangential to other circles or to the edge of the triangle (or both). Let C_n be the number of circles for some corresponding n such that $C_1 = 1$, $C_2 = 1 + 2$, $C_3 = 1 + 2 + 3$, and so on. If A is the area of the triangle, and A_n is the collective area of the C_n circles, show that

$$\lim_{n \rightarrow \infty} \frac{A_n}{A} = \frac{\pi}{2\sqrt{3}}$$



$$\sum_{k=1}^n = \frac{n(n+1)}{2}$$