Circles of equal radii are packed into an equilateral triangle with unit area in such a way that \(n\) circles are adjacent along the bottom edge, \(n-1\) directly above them, \(n-2\) above those, etc. (see picture, with \(n=3\)). If \(A_n\) is the sum of the areas of the circles find \(\lim_{n \to \infty} A_n\).

\[
A_n = \frac{n(n+1)}{2} \pi r^2 = \frac{\pi n(n+1)}{2\sqrt{3}(n+\sqrt{3})^2} \to \frac{\pi}{2\sqrt{3}} \text{ as } n \to \infty
\]