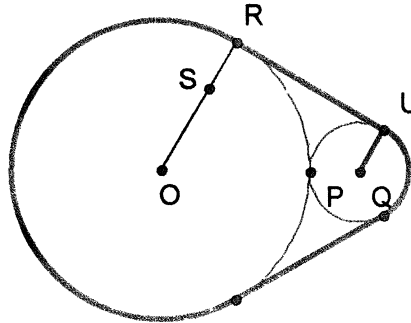E. If QU=x then OS = 2x, OQ = 4x so $\angle SOP=60°$, RU=2x$\sqrt{3}$ and band has length

$$(2/3)\pi 6x + (1/3)\ \pi 2x + 2RU = (14/3)\ \pi x + 4x\ \sqrt{3} \text{ so } x = \frac{36 + 14\pi\sqrt{3}}{4\sqrt{3} + {}^{14}\!/_{3}\ \pi} = 3\sqrt{3} \text{ so}$$

larger circle's area of $9\pi x^2 = 243\pi$.

F. $s_4 = r^2 s_2$ and sequence is not constant so r = -1 and s_3 = 2. Working backwards we get s_1 = -6 and s_0 = -10. Working forward the sequence is: -10, -6, -2, 2, -2, 2, 6, 10, 50/3, 250/9, 350/9, 50, 450/7, 4050/49, and s_{14} = 4950/49.