M145. *Proposed by Ovidiu-Gabriel Dinu, Balcesti-Valcea, Romania.*

Find all natural numbers n for which n, $n+2$, $n+6$, $n+8$, and $n+14$ are prime numbers.

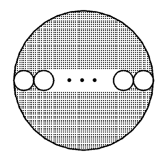
M146. *Proposed by Mohammed Aassila, Strasbourg, France.*

Let a, b, c be three positive numbers satisfying $a+b+c=1$. Prove that

$$(ab)^{5/4}+(bc)^{5/4}+(ca)^{5/4} \;<\; \frac{1}{4}\,.$$

M147. *Proposed by the Mayhem staff.*

The diameter of a large circle is broken into n equal parts to construct n smaller circles, as shown. Determine n so that the ratio of the shaded area to the unshaded area in the large circle is $3:1$.



M148. *Proposed by Vedula N. Murty, Dover, PA, USA.*

Let $x>1$, $y>1$, $z>1$ and $x^2=yz$. Determine the value of

$$\left(\log_{zx} xy^4z\right)\left(\log_{xy} xyz^4\right)\,.$$

M149. *Proposed by Bruce Shawyer, Memorial University of Newfoundland, St. John's, NL.*

A right-angled Heron triangle ABC has the following property: the area is λ times the perimeter, where λ is a positive integer. Determine all solutions (a,b,λ). (A Heron triangle is a triangle with integer sides and integer area.)

M150. *Proposed by Arkady Alt, San Jose, CA, USA.*

Let two complex numbers z_1 and z_2 satisfy the conditions

$$\begin{aligned} z_1+z_2 &= -(i+1)\,,\\ z_1\cdot z_2 &= -i\,. \end{aligned}$$

Without calculating z_1 and z_2, find $z_1\cdot\overline{z_2}$.