1 Question 4

Let $z = 2\,\mathrm{cis}\,\frac{\pi}{n}$, where $z \in \mathbb{C}$ and $n \in \mathbb{Z}^+$. z^0, z^1, z^2 ... z^n form the vertices of a polygon P_n. Show that the area of P_n can be expressed in the form $a^n(b^n - 1)\sin\frac{\pi}{n}$, where $a, b \in \mathbb{R}$.

Solution
Observe that every