

Question 8**(3 marks)**

Consider the complex sum: $\sum_{n=1}^{2020} n i^n = 1i^1 + 2i^2 + 3i^3 + \dots + 2020i^{2020}$

Express the value of this sum in the form $r \operatorname{cis} \theta$ where $-\pi < \theta \leq \pi$.