Problem 7: Polynomial Divisibility

Determine all values of the positive integer n such that the polynomial x^2+x+1 divides $x^{2n}+x^n+1$ over reals or complex numbers. Justify your answer. [Hint: Remember that $x^3-1=(x-1)(x^2+x+1)$]

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

Posting Date 11/7/2020. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 by e-mail or hard-copy by noon on Nov 21, 2020. An email submission must be a single pdf file. Hard copy submissions must be dropped in the file holder at my office door (Hayes 319) and must include a time stamp.