Please READ THE QUESTIONS CAREFULLY before answering.

1. Show that $X^3 + X + 1$ is a primitive polynomial.   [3 points]

2. Show that $X^3 + 1$ is not a primitive polynomial.   [3 points]

3. Does $X + 1$ divide $X^{2^n} + X^{2^n-1} + X^{2^n-2} + \cdots + X + 1$ where n is a non-negative integer?   [4 points]