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Modular forms and number theory exercises 08

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[mfms 08.1] Let ω be a primitive 7th root of unity, and $\xi = \omega + \omega^{-1}$. Observe that $\xi^3 + \xi^2 - 2\xi - 1 = 0$. Express ξ as a linear combination of Gauss sums mod 7.

[mfms 08.2] (*) Find the precise congruence condition on primes p for there to be a solution of $x^3 + x^2 - 2x - 1 = 0$ in \mathbb{Z}/p .