b) $P(x) \times P^{-1}(x) \equiv 1 \pmod{p(x)}$ irreducible polynomial.

$(x^7 + x^5 + x^4 + x^3 + x^2 + 1) \times (x^7 + x^6 + x^5 + x^4 + x^3)$

$x^{14} + x^{13} + x^{12} + x^{11} + x^{10} + x^{13} + x^{12} + x^{11} + x^{10} + x^9 + x^{11} + x^{10} + x^9 + x^8 + x^7$

$+ x^{10} + x^9 + x^8 + x^7 + x^6 + x^9 + x^8 + x^7 + x^6 + x^5 + x^7 + x^6 + x^5 + x^4 + x^3$

$\equiv x^{14} + x^{11} + x^9 + x^8$

$\equiv x^7 + x^6 + x^5 + x^4 + x^3 + x^2 + x + 1 + x^6 + x^5 + x^3$

$\equiv x^5 + x^2 + x + x + 1$

$\equiv 1$ so they are inverse.