

(b) Find the GF for F_{5n+4} as a rational function of q .

Hint: Let $\zeta = e^{2\pi i/5}$ and

$$V(q) := (1 - q - q^2).$$

Then

$$F(q) = \frac{1}{V(q)} = \frac{V(\zeta q) V(\zeta^2 q) V(\zeta^3 q) V(\zeta^4 q)}{V(q) V(\zeta q) V(\zeta^2 q) V(\zeta^3 q) V(\zeta^4 q)}$$

& use MAPLE to simplify these products.

(c) Hence deduce that $F_{5n+4} \equiv 0 \pmod{5}$.