

$$S = \{\frac{q-1}{4}, -\frac{q-1}{4}\} = \{\frac{q-1}{4}, \frac{3q+1}{4}\}; \quad T = \emptyset; \quad u_0 = 0; \quad u_1 = 1$$

Graph	Vertices	Edges	Description
H_0	$\mathbb{Z}_q - \{\frac{q-1}{4}, \frac{3q+1}{4}\}$	$\{(j, j + \frac{q-1}{2}) \mid j \in \mathbb{Z}_q - \{\frac{q-1}{4}, \frac{3q+1}{4}, \frac{3q-3}{4}\}\} \cup \{(\frac{3q-3}{4}, \frac{q+3}{4})\}$ sums modulo q	$(q-2)$ -cycle $\Omega(H_0) = \{\frac{q-1}{2}, \frac{q+3}{2}\}$
G_0	\mathbb{Z}_q	$\{(j, j + \frac{q-1}{2}) \mid j \in \mathbb{Z}_q\}$ sums modulo q	q -cycle $\Omega(G_0) = \{\frac{q-1}{2}\}$
$H_1 \cong G_1$	\mathbb{Z}_q	$\{(0, j) : j \in \mathbb{Z}_q^* - \{\frac{q-1}{2}, \frac{q+1}{2}\}\} \cup \{(\frac{q-1}{4}, \frac{q-1}{2}), (\frac{3q+1}{4}, \frac{q+1}{2})\}$	$\Omega(H_1) = \Omega(G_1) = \mathbb{Z}_q^* - \{\frac{q-1}{2}\}$