```
Algorithm    $\mathsf{ShamirToAdditive}_{t,n,\mathbb{F}}(i, \mathrm{X}, y_{(i)}) \leftarrow x_{(i)}$
Inputs:   $i \in [n]$ as the party index
          $\mathrm{X} \in [n]^t$ as a subset of $t$ indeces
          $y_{(i)} \in \mathbb{F}$ as a $t$-out-of-$n$ shamir share
Outputs:  $x_{(i)} \in \mathbb{F}$ as the corresponding $t$-out-of-$t$ additive share
    Set $\mathrm{X}' \leftarrow \mathrm{X} \setminus \{i\}$
    $\ell_i \leftarrow \prod_{j \in \mathrm{X}'} \frac{k}{k-i}$ as the Lagrange coefficient
    return $x_{(i)} \leftarrow y_{(i)} \cdot \ell_i$ as the additive share
```

References