$$\bigotimes_{k=0}^{n} \frac{1}{\sqrt{2}} \left(|0\rangle_k + e^{2\pi i(3/2^k)}|1\rangle_k \right) = \frac{1}{\sqrt{2^n}} \sum_{j=0}^{2^n-1} e^{2\pi i(3j)/2^n}|j\rangle = QFT|3\rangle$$