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Khang Tran, Fresno, CA , and **Andres I Zumba Quezada***

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For any real numbers $b, c \in \mathbb{R}$, we form the sequence of polynomials $\{H_m(z)\}_{m=0}^{\infty}$ satisfying the four-term recurrence

$$H_m(z) + cH_{m-1}(z) + bH_{m-2}(z) + zH_{m-3}(z) = 0, \quad m \geq 1,$$

with the initial conditions $H_0(z) = 1$ and $H_{-m}(z) = 0, \forall m \geq 1$. We find necessary and sufficient conditions on b and c under which the zeros of $H_m(z)$ are real for all m , and provide an explicit real interval on which $\bigcup_{m=0}^{\infty} \mathcal{Z}(H_m)$ is dense where $\mathcal{Z}(H_m)$ is the set of zeros of $H_m(z)$. (Received September 19, 2017)