Unitary anti-van der Waerden number of arithmetic progressions

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A set is *rainbow* if each element of the set is a different color. A coloring is *unitary* if at least one color is used exactly once. The *anti-van der Waerden number* of the integers from 1 to n, denoted by $aw([n], 3)$, is the least positive integer r such that every exact r-coloring of $[n]$ contains a rainbow 3-term arithmetic progression. The *unitary anti-van der Waerden number* of the integers from 1 to n, denoted by $aw_u([n], 3)$, is the least positive integer r such that every exact unitary r-coloring of $[n]$ contains a rainbow 3-term arithmetic progression. Bounds for the anti-van der Waerden number and the unitary anti-van der Waerden number have been established. The exact value of the unitary anti-van der Waerden number is equal to the anti-van der Waerden number and these are given by $aw([n], 3) = aw_u([n], 3) = \lceil \log_3 n \rceil + 2$.

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