12 Two arithmetic progressions, A and B, each have 100 terms. Their terms are denoted by $a_1, a_2, a_3, a_4, \ldots a_{100}$ and $b_1, b_2, b_3, b_4, \ldots b_{100}$ respectively.

It is given that $a_1 = b_{100} = 1$ and $a_{100} = b_1 = 298$.

(a) Find n such that $a_n - b_n = 45$. [6]

(b) Find the smallest m such that $a_m > 2b_m$. [3]

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