e.g.

$$A = \begin{bmatrix} c & c & \cdots & c \\ c & c & \cdots & c \\ c & c & \cdots & c \\ 1 & 1 & & \\ \vdots & & & \\ c & c & \cdots & c \end{bmatrix}_{n \times n}$$

$|xI - A| = x^{n-1}(x - nc)$

$= x^n - nc\,x^{n-1}$

$d = 0, \quad d = nc$

trace $= nc$

$\#$ λ is an eigen value of A iff $C(d) = 0$
i.e. d is a root of $C(x) = 0$

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