

1.1 $49 - 1.1102 \times 10^{-16}$

1.2 1.2246×10^{-16} , -3.2142×10^{-13} , -0.3941

1.3 $8.9885 \times 10^{+307}$, Inf

1.4 $\text{eig}(A) = 16.1168 \quad -1.1168 \quad -0.00\dots001$

1.5
$$\begin{vmatrix} 1-x & 2 & 3 \\ 4 & 5-x & 6 \\ 7 & 8 & 9-x \end{vmatrix} = (1-x) \begin{vmatrix} 5-x & 6 \\ 8 & 9-x \end{vmatrix} - 2 \begin{vmatrix} 4 & 6 \\ 7 & 9-x \end{vmatrix} + 3 \begin{vmatrix} 4 & 5-x \\ 7 & 8 \end{vmatrix}$$
 Why so complicated?
 $\Rightarrow x=0$

Just $\det(A)=0$
 $= 5 \cdot 9 - 8 \cdot 6 - 2(4 \cdot 9 - 7 \cdot 6) + 3(4 \cdot 8 - 5 \cdot 7)$
 $= 45 - 48 - 2(36 - 42) + 3(32 - 35)$
 $= -3 - 2(-6) + 3(3) = -3 + 12 + 9 \neq 0$

1.6 $\sim 0,015$ s

1.7 Dots are spread evenly inside the unit circle.

1.8 500 : 0,21s $\Rightarrow \times 4$ Computations are $O(n^2)$

1000 : 0,87s $\Rightarrow \times 4$

2000 : 4,2s $\Rightarrow \times 4$

1.9

3.1 $3,55 \times 10^{-15}$

3.2 $-5,54 \times 10^{-16}$, 0

3.3

3.4 $\sim 0,001$

3.5 $3,488 \times 10^{-16}$

4.1

0,75627...

4.2

1,37s racines exactes

4.3

2,93 sur $[-1, 1]$, sur $[-1, 10]$ guess

4.4

818