

Q1) From $A(x + \delta x) = (b + \delta b)$ $[Ax = b]$

$$\Rightarrow A\delta x = \delta b$$
$$\Rightarrow \delta x = A^{-1} \delta b.$$

For max δx .

$\Rightarrow \delta b$ should be in direction
of maximum magnification
of A^{-1} .

hence we choose δb st.

$$\arg \max_{\|x\|_2=1} \frac{\|A^{-1}x\|_2}{\|x\|_2}$$