4. $A = \begin{pmatrix} 1 & 10 \\ \delta & 1 \end{pmatrix}$ $\quad k(\delta) = \frac{d\varepsilon(\delta)}{d\delta}$

$|A - \varepsilon E| = 0$

$(1-\varepsilon)^2 - 10\delta = 0$

$\varepsilon^2 - 2\varepsilon + 1 - 10\delta = 0$

$D = 4 - 4 + 40\delta$

$\varepsilon_1 = \frac{2 - 2\sqrt{10\delta}}{2} = 1 - \sqrt{10\delta}$ $\quad \varepsilon_2 = 1 + \sqrt{10\delta}$

$\varepsilon_2 > \varepsilon_1$

$k(\delta) = \frac{d\varepsilon(\delta)}{d\delta} = \frac{d(1 + \sqrt{10\delta})}{d\delta} = \frac{\sqrt{10}}{2\sqrt{\delta}}$

$\delta = 0 \Rightarrow \frac{1}{2} = k(\delta)$

$\delta = 0{,}1 \Rightarrow k(\delta) = 5$