$$k \log \|I - M^{-1}A\| \leq \log \varepsilon - \log \|e_0\|$$

Since $\log \|I - M^{-1}A\| < 0$, then

$$k \geq \frac{\log \varepsilon - \log \|e_0\|}{\log \|I - M^{-1}A\|}$$

$$k \geq \frac{\log(\varepsilon / \|e_0\|)}{\log \|I - M^{-1}A\|}$$

f) Since $\rho(I - M^{-1}A)$ is the largest absolute value of the eigen values of $(I - M^{-1}A)$, and the number of iterations is given by

$$k \geq \frac{\log(\varepsilon / \|e_0\|)}{\log \|I - M^{-1}A\|}$$

$$k \geq \frac{\log \varepsilon}{\log \|I - M^{-1}A\|} - \frac{\log \|e_0\|}{\log \|I - M^{-1}A\|}$$