54. We use the result of problem 48: $R = t/[C\ln(V_0/V)]$. Then, for $t_{\min} = 10.0\,\mu\text{s}$

$$R_{\min} = \frac{10.0\,\mu\text{s}}{(0.220\,\mu\text{F})\ln(5.00/0.800)} = 24.8\,\Omega.$$

For $t_{\max} = 6.00\,\text{ms}$,

$$R_{\max} = \left(\frac{6.00\,\text{ms}}{10.0\,\mu\text{s}}\right)(24.8\,\Omega) = 1.49 \times 10^4\,\Omega\ ,$$

where in the last equation we used $\tau = RC$.