Curve 1

R_2 = open $\qquad V = V_f\left(1 - e^{-t/\tau}\right)$

$$1 - \frac{1.97}{3.15} = e^{-t/\tau} \qquad 1.97 = 3.15\left(1 - e^{-t/\tau}\right)$$

$$\ln\left(1 - \frac{1.97}{3.15}\right) = -0.05/\tau$$

$$\tau = \frac{-0.05}{\ln\left(1 - \frac{1.97}{3.15}\right)} = 0.051$$

$RC = 0.05$

$$R = \frac{0.05}{0.000001} = 50\,k\Omega$$

closest value is $51\,k\Omega$ and indeed looks correct

Curve 2

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$$

$\tau_{closed} = 0.05$

$R = 51k$

$0.6 = e^{-t/\tau}$ $\qquad e^{\frac{0.05}{\tau}} = 1.66$

$\frac{0.05}{\tau} = \ln(1.67) \approx 0.51$ $\qquad \tau = \frac{0.05}{0.51}$

$\tau = 0.1$ $\qquad \frac{0.1}{0.000001} = 100k\Omega$

$R_2 = 100k$

$50k = \frac{1}{\frac{1}{R_1} + \frac{1}{100k}}$

$R_1 = 100k$

Using these resistors does correlate with the graph