Q4. (a). (b). $\hat{r}_j = r_j \cdot V(\dots)$

$$V(\dots)_j = \frac{\sum w_i f_i}{\sum w_j f_j} \qquad f_i = \frac{(x/k_i)^{n_i}}{1 + (x/k_i)^{n_i}}$$

no 3'-5' AMP. $w_1 f_1 = w_1$ No activator, $f_1 = 1$

with 3'-5' AMP. $w_2 f_2$

$$f_2 = \frac{(x/k_2)^{n_2}}{1+(x/k_2)^{n_2}}$$

$$V(\dots)_j = \frac{w_1 + w_2 f_2}{1 + w_1 + w_2 f_2}$$

$$r_1 = k_{cat} E_1 \left(\frac{F6P}{k_{F6P} + F6P}\right)\left(\frac{ATP}{k_{ATP} + ATP}\right)$$

Input all given parameters.

$$r_1 = 0.4\ s^{-1} \times 0.12\ \mu M \times \frac{0.1}{0.11 + 0.1} \times \frac{3.2}{0.42 + 3.2}$$

$$= 0.01933\ \mu M \cdot s^{-1} = 69.5798\ \mu M \cdot h^{-1}$$

(1) $\frac{w_1}{1 + w_1} \times 69.5798 = 3.003$ $\underline{w_1 = 0.0451}$

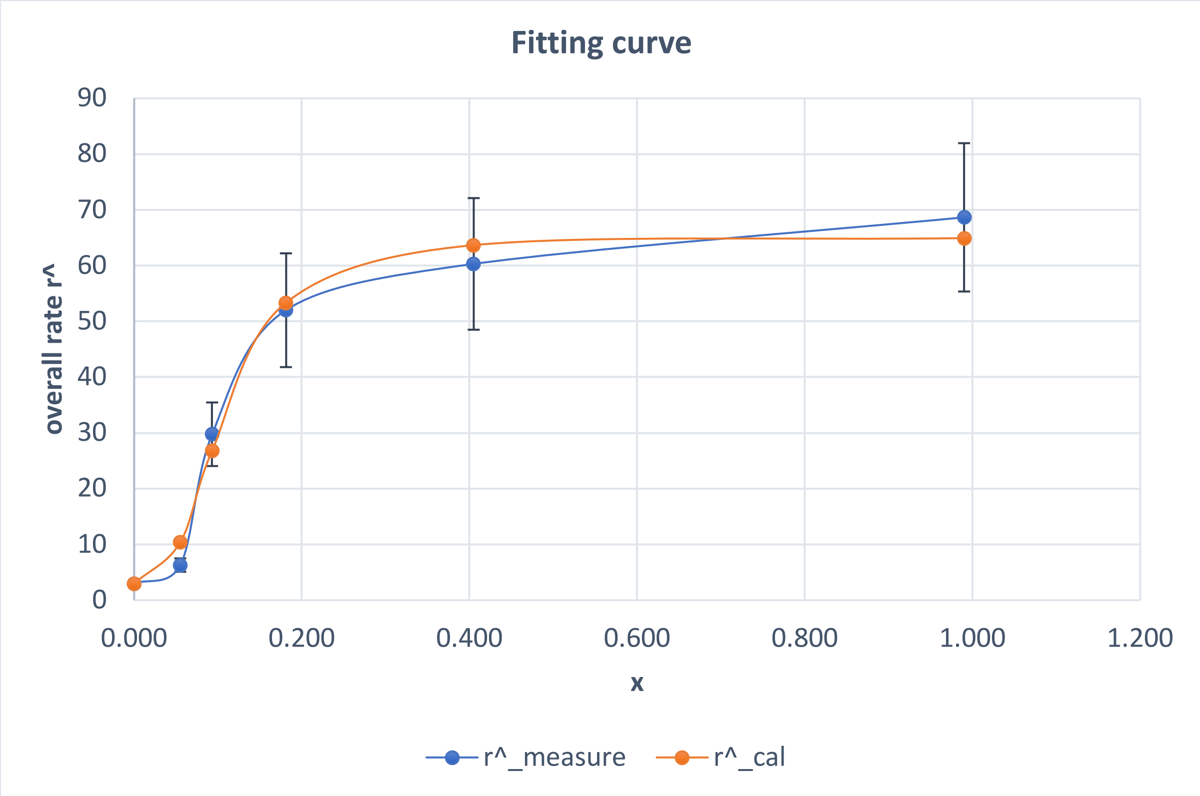
(2). $\frac{0.0451 + w_2 \cdot f_2}{1 + 0.0451 + w_2 f_2} \times 69.5798 = \hat{r}_i$ Solve the best fitting curve using Excel.

$$f_2 = \frac{(x/k_2)^{n_2}}{1 + (x/k_2)^{n_2}}$$

$\underline{w_2 = 14.28}$

$\underline{k_2 = 0.28}$ $\underline{n_2 = 2.9}$

(c).



The proposed model describes the data pretty well since the fitting curve fits the measured curve nicely and the value is within the 95% confidence estimator.