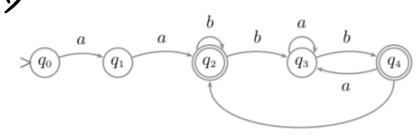
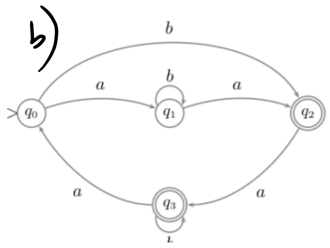
Ejercicio 3. Para cada uno de los AF's que se muestran a continuación, hallar su expresión regular equivalente utilizando el Teorema de Kleene (vuelta):

a)



b)



a)
$$\begin{cases} X_0 = aX_1 \\ X_1 = aX_2 \\ X_2 = bX_2 + bX_3 = b^* + bX_3 \\ X_3 = aX_3 + bX_4 = a^* + bX_4 \\ X_4 = aX_3 + aX_2 = a(a^* + bX_4) + aX_2 = aa^* + ab^* + aX_2 \end{cases}$$

b)
$$\begin{cases} X_0 = bX_2 + aX_1 + aX_3 = aX_1 + bX_2 + a(b^* + aX_0) = aX_1 + bX_2 + ab^* + aa^* \\ X_1 = bX_1 + aX_2 = b^* + aX_2 \\ X_2 = aX_3 \\ X_3 = bX_3 + aX_0 = b^* + aX_0 \end{cases}$$

$$\begin{aligned} X_0 &= aX_1 + bX_2 + ab^* + aa^* \\ &= a(b^* + aX_2) + bX_2 + ab^* + aa^* \\ &= ab^* + a^2X_2 + bX_2 + ab^* + aa^* \\ &= ab^* + X_2(a^2 + b) + ab^* + aa^* \end{aligned}$$

$$\begin{aligned} X_2 &= a\left(b^* + a\left(ab^* + X_2(a^2+b) + ab^* + aa^*\right)\right) \\ &= ab^* + a\left(a^2b^* + a(a^2+b)^* + a^2b^* + a^2a^*\right) \\ &= ab^* + a^3b^* + a^2(a^2+b)^* + a^2b^* + a^3a^* \end{aligned}$$

$$X_1 = b^* + a\left(ab^* + a^3b^* + a^2(a^2+b)^* + a^2b^* + a^3a^*\right)$$

$$X_0 = ab^* + (a^2+b)\left(ab^* + a^3b^* + a^2(a^2+b)^* + a^2b^* + a^3a^*\right) + ab^* + aa^*$$

Ni idea si está bien.