X_1 $S_n \equiv$ Susceptible population @ time n

X_2 $I_n \equiv$ Infected Reported cases @ time n

X_3 $R_n \equiv$ Recovered @ time n

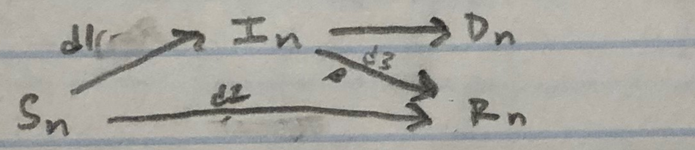
X_4 $D_n \equiv$ DEATHS FROM COVID-19 @ n

$\alpha \equiv$ RATE of $S_n \rightarrow I_n$ (INFECTION)

$\beta \equiv$ RATE of $I_n \rightarrow R_n$ (INFECTED TO RECOVERED)

$\lambda \equiv$ RATE of $I_n \rightarrow D_n$ (INFECTED TO DEATH)

$1-\alpha \equiv$ RATE of $S_n \rightarrow R_n$ (RECOVERING WITHOUT REPORTING)



$S_{n+1} = S_n - (\alpha S_n I_n) - (1-\beta)(\alpha S_n I_n)$ ✓

$I_{n+1} = I_n + (\alpha S_n I_n) - (\lambda I_n) - (\beta I_n)$

$R_{n+1} = R_n + (\beta I_n) + (1-\beta(\alpha S_n I_n))$

$D_{n+1} = D_n + (\lambda I_n)$

$X_{1,n+1} = X_1 - (\text{alpha } X_1 X_2) - (1-\text{beta})(\text{alpha } X_1 X_2)$

$X_{2,n+1} = X_2 + (\text{alpha } X_1 X_2) - (\text{lambda } X_2) - (\text{beta } X_2)$

$X_{3,n+1} = X_3 + (\text{beta } X_2) + (1-\text{beta})(\text{alpha } X_1 X_2))$

$X_{4,n+1} = X_4 + (\text{lambda } X_2)$

1) PLOT FUNC

2) CONSTRAINTS