

# Matrix Math Notation

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Let's start by going back to our whale example. We want to have our equations in Markdown. Let's do that by writing some fancy Latex.

$$N_C(t+1) = N_R(t)b$$

$$N_I(t+1) = N_C(t)s_{IC} + N_I(t)s_{II}$$

$$N_M(t+1) = N_I(t)s_{MI} + N_M(t)s_{MM} + N_R(t)s_{MR}$$

$$N_R(t+1) = N_I(t)s_{RI} + N_M(t)s_{RM} + N_R(t)s_{RR}$$

but we'll also want this to be

$$\begin{pmatrix} N_C(t+1) \\ N_I(t+1) \\ N_M(t+1) \\ N_R(t+1) \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 & b \\ s_{IC} & s_{II} & 0 & 0 \\ 0 & s_{MI} & s_{MM} & s_{MR} \\ 0 & s_{RI} & s_{RM} & s_{RR} \end{pmatrix} \begin{pmatrix} N_C(t) \\ N_I(t) \\ N_M(t) \\ N_R(t) \end{pmatrix}$$