

\*  
If  $\frac{dP}{dt} = kP(M-P)$

then

$$P = \frac{M}{1 + Ae^{-(Mk)t}}$$

OR

If  $\frac{dP}{dt} = kP\left(1 - \frac{P}{M}\right)$

then

$$P = \frac{M}{1 + Ae^{-kt}}$$