This reveals the meaning of the constant M:
it is the carrying capacity the system.

It is the maximum population that is stable.

Q: if the birth rate is $\beta = 100 - P$
and the death rate is $\delta = P + 2$

What is the carrying capacity?

A: $\frac{dP}{dt} = (\beta - \delta)P = (100 - P - 2 - P)P = (98 - 2P)P$

$\frac{dP}{dt} = 2P\left(\frac{98}{2} - P\right)$

So the carrying capacity is $\frac{98}{2} = 49$