

In a city having a fixed population of P persons, the time rate of change of the number N of those persons who have heard a certain rumor is proportional to the number of those who have not yet heard the rumor. Write a differential equation that is a mathematical model of the described situation.

$$\frac{dN}{dt} = k(P-N)$$

→ People who have not heard the rumor.

→ Proportionality constant.