Group 2 - Mathematica Models

# Exponential population growth

Where:

N = population size

= population size at start

= population size at desired time

t = time

e = base of natural logarithm (2,718)

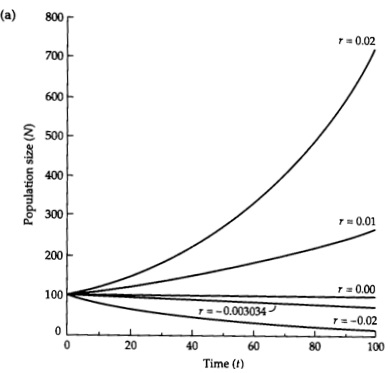
r = rate of increase

r is calculated by: r = b – d

where b is birth rate (births / N )

d is death rate (deaths / N)

r dictates the growth in population. If r>0 population will grow, if r=0 population will stall, if r<0 population will decrease



# Logistic population growth

Previous model assumes unlimited recourses and perfect conditions, which does not occur in real life. This model includes recourse depletion and limited space to predict population growth.

K – carrying capacity (maximum population size area can support)

Example of the graph where K = 100,

The growth will decrease as population reaches maximum capacity, giving the chart it’s trademark S shape

