Competitive disadvantage

EXTINCTION BY REPLACEMENT

Two species coexist in equal numbers, 100 of each. They eat the same food and occupy the same habitat. Food supply is limited so that the combined population can not exceed 200. Species A is more efficient than species B so its numbers increase by a small percentage each year and species B decreases. Calculate how long it takes for species B to be eliminated.

The general formula is $n = N(1+p)^x$

Where n= new population, N = original population, p = yearly percentage increase as a decimal and x = number of generations

Choose a percentage between 1% and 5%. Initially calculate the population of species A after every 10 generations until the population exceeds 200. Then try other numbers of generations to find exactly how many generations are needed for the population of A to reach 200 and thus population B to reduce to 0.

	Species A	*Species B*
Starting population	*100*	*100*
After 10 generations	$100x(1.01)^{10}$	*200-A =*
20		