

Project Code

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with(LinearAlgebra):

interface(warnlevel=0, rtablesize=20):

A[1]:=<<1, 1/2, 0>
      |<0, 1/2, 1>
      |<0, 0, 0>>: #First matrix/first cross.
x[0]:=<1/3, 1/3, 1/3>: #Initial frequency vector for first part.
x[1]:= A[1]. x[0]: #First generation after initial.
f[1]:= (A[1]^(x)). x[0]: #Function to be used in first limit
equation.
x[n1]:= limit(f[1], x=infinity): #Hardy-Weinberg for first
matrix.

A[2]:=<<1/2, 1/4, 0>
      |<1/2, 1/2, 1/2>
      |<0, 1/4, 1/2>>: #Second Matrix/second cross.
A[3]:=<<0, 0, 0>
      |<1, 1/2, 0>
      |<0, 1/2, 1>>: #Third Matrix/third cross.
f[2]:= (A[2]^(x)). x[0]: #Function to be used in second limit
equation.

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f[3]:= (A[3]^(x)). x[0]: #Function to be used in third limit equation.

x[n2]:= limit(f[2], x=infinity): #Hardy-Weinberg for second matrix.

x[n3]:= limit(f[3], x=infinity): #Hardy-Weinberg for third matrix.

AB:=<<1, 1/2, 0, 1/2, 1/4, 0, 0 ,0, 0>

|<0, 1/2, 1, 0, 1/4, 1/2, 0, 0, 0>

|<0, 0, 0, 0, 0, 0, 0, 0, 0>

|<0, 0, 0, 1/2, 1/4, 0, 1, 1/2, 0>

|<0, 0, 0, 0, 1/4, 1/2, 0, 1/2, 0>

|<0, 0, 0, 0, 0, 0, 0, 0, 1>

|<0, 0, 0, 0, 0, 0, 0, 0, 0>

|<0, 0, 0, 0, 0, 0, 0, 0, 0>

|<0, 0, 0, 0, 0, 0, 0, 0, 0>>: #Matrix for two gene cross.

y[0]:=< 1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9>: #Initial frequency vector for two gene cross.

f[4]:= (AB^(x)). y[0]: #Function to be used in final limit equation.

y[n]:= limit(f[4], x=infinity): #Hardy-Weinberg for two gene cross matrix.