QUIZ November 20, 2013

1. The eigenvectors and eigenvalues of a matrix A describe the long-term behaviour of a discrete dynamical system, $\mathbf{x}_{k+1} = A\mathbf{x}_k$ as k tends toward infinity.

2. Let A be a diagonal matrix with entries $a_1, \ldots, a_n$ along the diagonal. Let B be a diagonal matrix with entries $b_1, \ldots, b_n$ along the diagonal. Then AB is a diagonal matrix with entries $a_1 b_1, \ldots, a_n b_n$ along the diagonal.

3. The function $f(k) = a^k$ tends toward ∞ if $|a| > 1$, tends toward 0 if $|a| < 1$ and tends toward 1 if $|a| = 1$.