Real Quiz 8 of Dr. Z.'s Dynamical Models in Biology class

Name: (print!)

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1. Recall that the Hardy-Weinberg rule (where the fraction of the population that have genotype AA is u, the fraction that have genotype Aa is v (and hence the fraction of the population that has genotype aa is $w = 1 - u - v$) is:

$$(u, v) \rightarrow \left(u^2 + vu + \frac{1}{4}v^2, -2vu - 2u^2 + 2u - \frac{1}{2}v^2 + v \right)$$

(i) (5 points) If right now, $\frac{1}{2}$ of the population have genotupe AA, $\frac{1}{3}$ of the polpulation have genotype Aa, what is the fraction of aa genotypes **(ia)** Right now? **(ib)** In ten generations?

(ii) (5 points) Prove that the above equilibrium (after ten generations) is semi-stable.