Prof. uhn, Question 1 – Endogenous separations

A worker, who previously had been a farmer, quits his permanent position in order to move to a new city. He arrives in the new city and starts out unemployed and looking for work. During unemployment, workers receive an unemployment benefit of b. Because the job market is going well, unemployed workers find a job next period for sure. However, it is not clear if the worker is productive in a given job until he has started to work. There are two possibilities: the match between the job and the worker is unproductive in which case the worker gets paid a wage of w_L, or the match between job and worker is productive in which case the worker receives a higher wage of $w_H > w_L$. At the end of every period the worker has the opportunity to quit his current job. If he quits, he will be unemployed in the coming period.

Denote the probability that a worker who just started a job (coming from unemployment) is productive in that job with π_{uh}, and the probability that the worker is unproductive with $\pi_{ul} = 1 - \pi_{uh}$. Once a worker finds himself in a high productivity job, the chance that the job will still be high productivity next period is π_{hh}, and so there is a chance of $\pi_{hl} = 1 - \pi_{hh}$ that the match becomes low productivity. Similarly, π_{ll} is the probability that a low-productivity match stays low productivity (and $\pi_{lh} = 1 - \pi_{ll}$ the probability that it becomes a high-productivity match next period). Note that the worker does not know what next period's productivity is when making the decision whether to quit his job (just as he does not know which type the