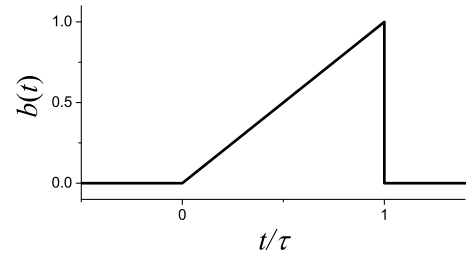**PHYS 452: Quantum Mechanics II – Fall 2016**
Quiz #5

Consider a three-level system with the time-dependent Hamiltonian

$$H = \epsilon \begin{pmatrix} 1 & \sqrt{\frac{3}{2}}\,b(t) & 0 \\ \sqrt{\frac{3}{2}}\,b(t) & 2 & \sqrt{\frac{3}{2}}\,b(t) \\ 0 & \sqrt{\frac{3}{2}}\,b(t) & 3 \end{pmatrix}$$

where function $b(t)$ has the following form:

$$b(t) = \begin{cases} 0, & t \leq 0 \\ t/\tau, & 0 < t < \tau \\ 0, & t \geq \tau \end{cases} \qquad \tau \gg \frac{\hbar}{\epsilon}$$

At $t = -\infty$ the system starts in the ground state. What is the probability that the system will be found in the ground state at $t > \tau$?