PROBLEM BASICS 2

Consider the wavefunction

$$\Psi_1(x) = a \cos\left(\frac{\pi x}{L} - \tfrac{1}{2}\pi\right)$$

for a particle constrained to move along the x axis between the coordinates 0 and L.

(a) Determine the normalization constant a.
(b) Calculate the probability to find the particle between $\tfrac{1}{4}L$ and $\tfrac{3}{4}L$.