PROBLEM BASICS 2

Consider the wavefunction

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

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 \(\frac{1}{4} L\) and \(\frac{3}{4} L\).