

Q.1

a.) IF $\psi(x) = A(\cos(x) + i \sin(x)) = A e^{ix}$

THEN $|\psi(x)|^2 = A e^{ix} \cdot A e^{-ix} = A^2$

WHICH HAS NO DEPENDENCE ON x .

b.) PROBABILITY DENSITY IS GIVEN

BY $P(x)dx = |\psi(x)|^2 dx$. IF $|\psi(x)|^2$ WAS DEPENDENT ON x THEN THE PROBABILITY OF FINDING THE PARTICLE AT x WOULD BE VARIABLE (i.e., NOT EQUALLY LIKELY TO BE ANYWHERE ON x).