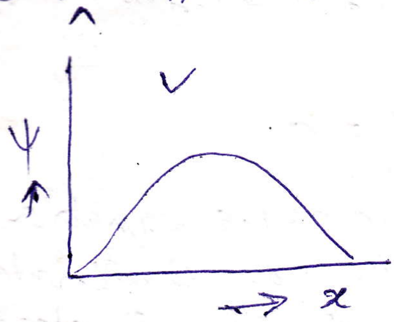
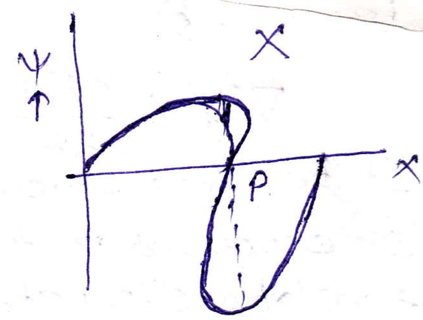
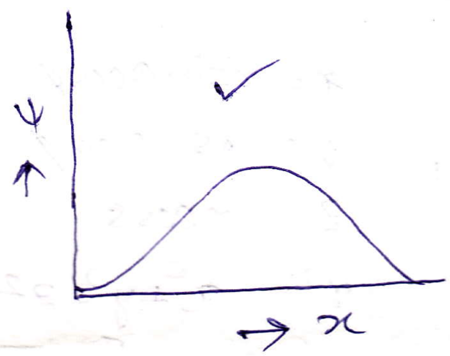
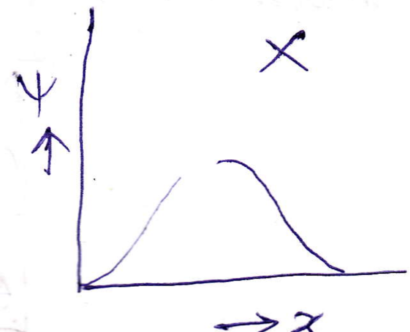
(ii) ψ must be single valued, i.e, at a particular point there can never be more than one value of ψ at a particular point.





(iii) ψ must be continuous





(iv) ψ must be normalized. The probability of finding the particle over the whole space must be unity. Mathematically it is represented by

$$\int_{-\infty}^{+\infty} \psi^2 \, d\tau = 1$$

or,

$$\int_{-\infty}^{+\infty} \psi\psi^* \, d\tau = 1.$$

<u>Normalized and Orthogonal wave functions:</u>

If ψ_1 and ψ_2 are two eigen functions and they are normalized then the following conditions are maintained

$$\int_{-\infty}^{+\infty} \psi_1\psi_1^* \, d\tau = 1 \quad \text{and} \quad \int_{-\infty}^{+\infty} \psi_2\psi_2^* \, d\tau = 1$$

and if they are mutually orthogonal then

$$\int_{-\infty}^{+\infty} \psi_1\psi_2 \, d\tau = 0, \text{ or } \int_{-\infty}^{+\infty} \psi_1^*\psi_2 \, d\tau = 0 \text{ or } \int_{-\infty}^{+\infty} \psi_1\psi_2^* \, d\tau = 0$$