

ASSIGNMENT - I (DEADLINE 1 PM ON 28/8/2020)

- ① CONSIDER TWO ONE-DIMENSIONAL FUNCTIONS GIVEN BELOW

$$\psi_A(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-x_A)^2}{2\sigma^2}}$$

$$\psi_B(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-x_B)^2}{2\sigma^2}}$$

WHERE x_A , x_B , AND σ ARE CONSTANT PARAMETERS WHOSE VALUES

ARE $x_A = 3.0$, $x_B = 5.0$, AND

$$\sigma = 0.5.$$

- PLOT (a) $\psi_A(x) + \psi_B(x)$ vs x
(b) $(\psi_A(x) + \psi_B(x))^2$ vs x
(c) $(\psi_A(x) - \psi_B(x))^2$ vs x
(d) $\psi_A(x) - \psi_B(x)$ vs x

FOR $0 \leq x \leq 8$.

IF x_A AND x_B DENOTE THE POSITIONS OF ATOMS A AND B ON THE X-AXIS, AND ψ_A AND ψ_B DENOTE THEIR WAVE FUNCTIONS, COMPARE THE PLOTS (b) AND (c) IN THE REGION $x_A \leq x \leq x_B$.