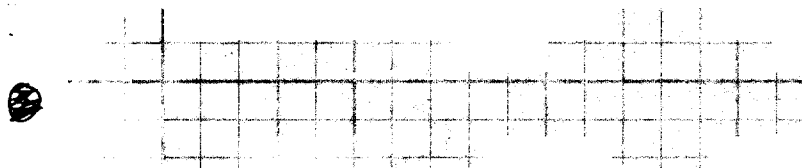


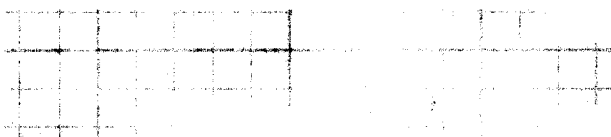
Normalization

Normalize the following functions over the given space

① $\psi(x) = 1 - x^2$ space $-1 \leq x \leq 1$



② $\psi(\theta) = e^{i\alpha\theta}$ space $0 \leq \theta < 2\pi$



③ $\psi(x) = x e^{-\alpha x}$ space $0 \leq x < \infty$ and $\alpha > 0$

Note: $\int_0^{\infty} x^n e^{-\alpha x} dx = \frac{n!}{\alpha^{n+1}}$ $\alpha > 0$, n positive integer

