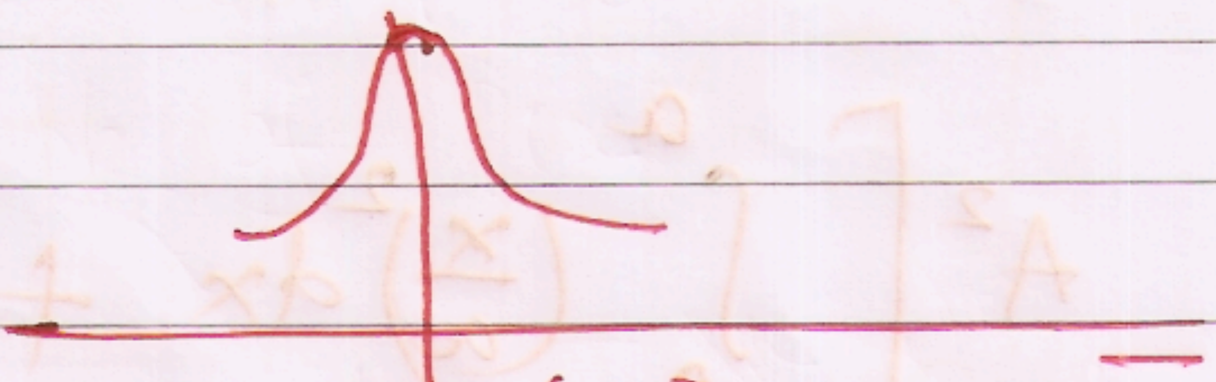
Gaussian Dist. can therefore be written as

$$\frac{1}{\sigma\sqrt{2\pi}}\int_{-\infty}^{\infty} \exp\left[-\frac{(x-\langle x\rangle)^2}{2\sigma^2}\right]dx$$

it looks like



$x = \langle x\rangle = a = \bar{x}$

Problem 1.4.

At time $t=0$ a particle is represented by the wave function

$$\Psi(x,0) = \begin{cases} A\frac{x}{a} & \text{if } 0 \le x \le a \\ A\frac{(b-x)}{(b-a)}, & \text{if } a \le x \le b \\ 0, & \text{otherwise} \end{cases}$$

where A, a, b are constants.

ⓐ Normalize Ψ (that is, find A, in terms of a & b)

ⓑ Sketch $\Psi(x,0)$, as a function of x.

ⓒ Where is the particle most likely to be found at $t=0$

ⓓ What is the probability of finding the particle to the left of a? Check your result in the limiting case $b=a$ and $b=2a$.

ⓔ What is the expectation value of x?