call This is intaltively true, since there is a Solso -distribution of where the particles making up or density come from; left or right. In this case, a particle at the comingit a a sporce from test the 18 ft is from X+ ax some from the right is X- AX , thus the probability dons own density has model

 $P(x, ++\Delta t) = \frac{1}{2} P(x+\Delta x, t) + \frac{1}{2} P(x-\Delta x, t)$

(6): Let us focus on hand writing. We define

Fasting Notes

and consider the equation seen in (a):

P(x, ++4+)=== P(x+ax,+)+== P(x-ax,+)

then subtract P(xxt) from each side

11 - P(xxt) = 11 - P(xxt)

then multiply each side by D:

 $\frac{\left(\rho(x_3 + + \Delta t) - \left(\rho(x_3 + 1)\right)\left(\Delta x\right)^2}{\rho(x_3 + \Delta t) - \rho(x_3 + 1)}$

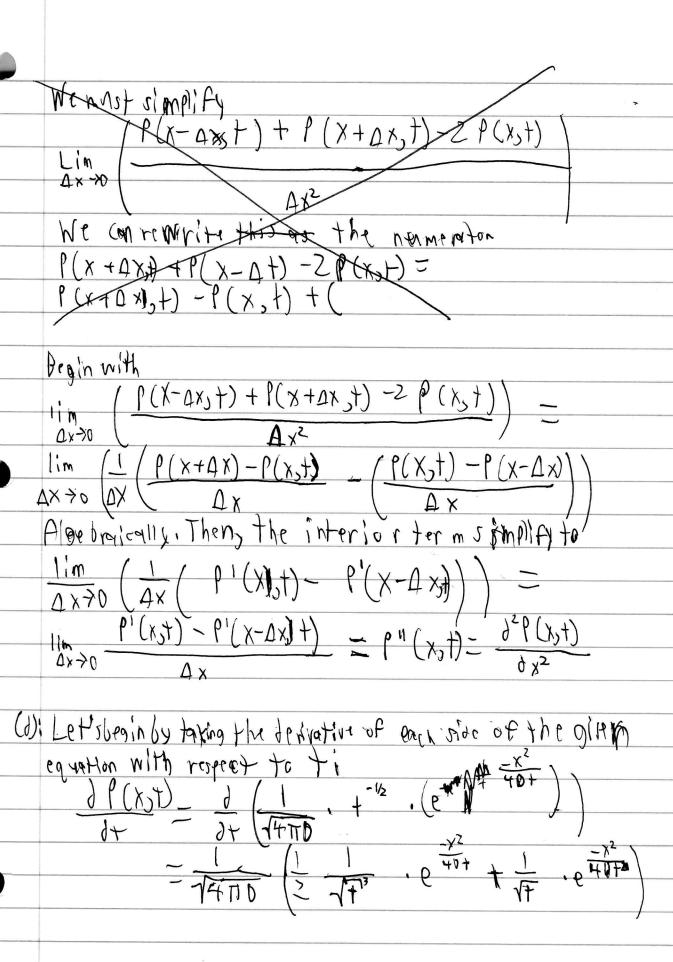
24+

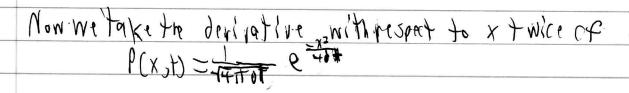
 $\frac{P(x,t+4t)-P(x,t)}{Qx^2} = \frac{P(X+4x,t)+P(X-4x,t)-P(x,t)}{Qx^2}$

(1) Take the limit of meth sides as At > 0 and Ax > 0;

 $\frac{\partial P(X)}{\partial t} = \lim_{\Delta x \to 0} \frac{\left(P(x - \Delta x) + P(x + \Delta x) + P(x + \Delta x) - P(x + \Delta x)\right)}{\Delta x^2}$

I astimy Notes





$$\frac{d^2P(\chi_0+)}{d\chi^2} = \frac{1}{1+\pi 0+} \left(\frac{-2\chi}{40+}, \frac{-2\chi}{40+}\right)$$

2420

Let's dothis right. We are told that

$$P(X+) = \frac{1^{2}P(X+1)}{\sqrt{4\pi}O + EXP(\frac{-X^{2}}{4O + 1})}$$

and we must show that

We shall prome this explicitly.

$$= \left(\frac{1}{\sqrt{4\pi}}\right)^{1} \cdot e^{XP}\left(\frac{-X^{2}}{407}\right) + \frac{1}{\sqrt{4\pi}}\left(e^{XP}\frac{-X^{2}}{401}\right)^{1}$$

We brook this into pleces for clarity!

$$=\frac{1}{\sqrt{4\pi}}\frac{1}{\sqrt{7}}$$

$$=\frac{1}{\sqrt{7}}\frac{1}{\sqrt{7}}$$

thus

Nomine have to take the depleatives with respect to x of the giron equation.

This inst made this integral unnessarily complicated, sofet's try a differen

Let's replicate the hint since this is a long and hard bai.

3: Randomby choose an axis and to follow it by ±1

probability of accuring,