Continue Lant of the Linear Chain and the chain = constant

made (= m/a = constant)

fit) - g(x, t)

g(t) - g(t) - dg = a fit

frant (t) - g(t) - dg = a fit

1 E - 2 a Jax (thin just says N = 2 o = Ka = constant = string tension mx+Kx=O on modo, x 200 =) restorative force +00 => x -> 0 w/ K -> ~ > mx + Kx = 0  $L(q_n,q_n) = \left[\frac{\pi}{2}(q_n)^2 - \frac{\kappa}{2}(q_n - q_n)^2\right]$ → = Sdy = [pa(it) - = = = = (it) =]  $=\frac{1}{2}\int_{A}^{A}\left[\left(\frac{1}{2}\right)^{2}-\sigma\left(\frac{1}{2}\right)^{2}\right]$ 

and

$$S = \int_{t_{1}}^{t_{2}} L dt = \int_{t_{1}}^{t_{2}} dt \int_{t_{2}}^{t_{3}} dx \times dt$$

The EON are deturned by extremining the action.

$$SS = \int_{t}^{t_{f}} dt \int_{x}^{t} SZ$$

(Za)

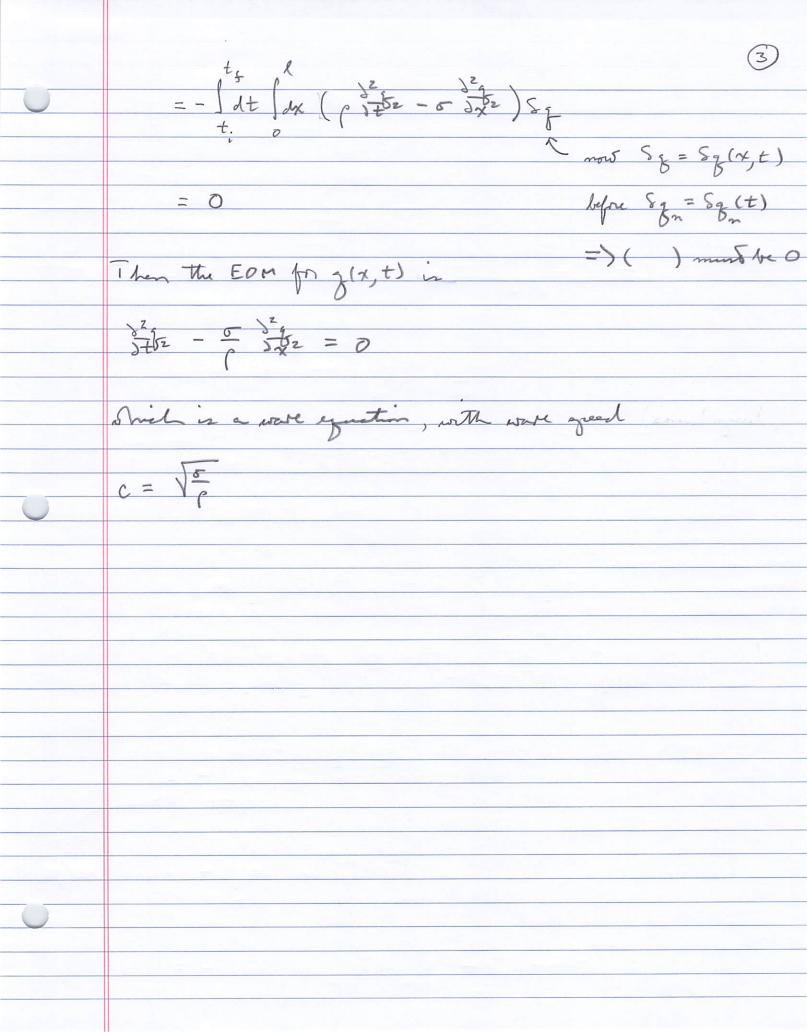
$$\int_{0}^{1} dx \int_{0}^{1} dx \int_{0}^{1} \int_{0}^{1$$

since

$$s_{g(x,t_{s})} = 0$$
 for all  $x \in [0,1]$ 

mee

by seriodiety



## Classial Fold Therry

We can extend the Lagrangian formulation of classical dynamics for good granticles to field.

The consymbence is

$$f(t) \rightarrow \phi(x) \qquad \chi = (\vec{x}, t)$$

$$g(t) \longrightarrow g(x)$$

We define a Lagrangian density related to the Lagrangian at

$$S = \int dt L = \int d^{n}x Z(\phi, \lambda \phi)$$

LAGRANGIAN DENSITY

Compute SS:

Now instead I ming Sq(t) = Sq(t) = 0 we singly assume that our fields are well - behaved functions I greatime - i. e., that they go to your X x = ± x.

The solutions under the action on extremen (SS=D) and entiry

$$\frac{24}{35} - 3\left(\frac{2(34)}{35}\right) = 0$$

One can not define the momentum conjugate to of

$$\overline{\Pi}(\chi) \equiv \overline{\Lambda}(\chi_1(\chi_2))$$

the Humiltonian density

Shirt is related to the Hamiltonian by

An an example, consider the following Lagrangian dentity

Then

and

The EDM then read

Shirt in the Klein-Gordon question.