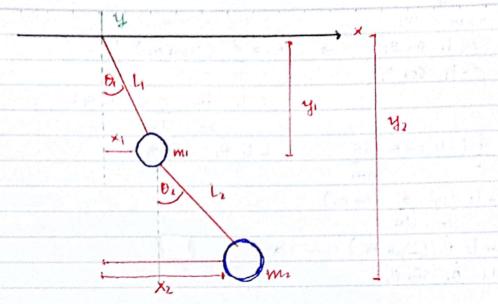
though Mutmmnoh'; komolubin hordensyoh i Nuni comilo-18.



Tingay M2

X2 = X1 + L2 SIN B2

= Li sinti + Li sin di

72 = d (Lisin Bi + Lz sin Oz)

dt.

= L1 B1 cos B1 + L2 B2 cos B

y2 = 1, - 12 cos. 02

= - 11 cos 01 - 12 cos 02

iμ : d (4 cos θ1 - 12 cos θ2)

dt

= 4 01 Sin 9 + 12 02. Sin 02

Raftifum Fishom

"Resonnsi smoul

հ (6) (0)

Pers. Lagrange

L = T-V

V = m, . g. 31 + m2. g. 32

= m, , g (- 4 (os 01) + m2. g (-1, cos 01 - 12. cos 02)

= -m.g hos O1 - m, g hos O1 - m2 g-le cos O2

= - (mitmz) 9 4 cos oi - mz glz cos oz

```
Tin zau an
               MI
       : h an 81
                                 X = d \left( lism \theta_i \right) d\theta
 yı
      =- 4 605 01
                                                        do
                                      dt
 ₹
                                                      (sin 01)
                                    = 4 do:
4 = d (-4 ws on) do
                                    = 4 B1 Ws (01)
                     dei
   = - 4 do, d (cos o)
          dt do.
  = - 4 0, L- sun 0, )
  = 4 D, Sin D, -
  sumby x
                                                           Sumbu y
                                                  y, : 40, sin of
  X, : li oi cos oi
  X1 = 4, 0, cos 0, + 1, 0, Los 02
                                                   42 = lidi sin di + lz Dr sin Dz
  V = - (m+m2) g li cos Di - mg/2 cos Dz -0 potensisi
            Sin 20+ cos20-1
- Andisis Frienzi lanetik (T) sistem
  T=1/2m0,2+1/2m0,2
=1/2m(x1,4,)2+1/2m(x2+4,2)2
     : 1/2 m[ ( li 0, cos 91)2 +( li 0, sin 01)2]+1/2 m[( li 0, cos 01+ li 0, cos 02)2+
    (\ell_1 \, \theta_1 \, \sin \theta_1 + \ell_2 \, \theta_2 \, \sin \theta_2)^2]
= |\ell_2 \, m \, \left[ \, \ell_1^2 \, \theta_1^2 \, \cos^2 \theta_1 + \ell_1^2 \, \theta_1^2 \, \sin \theta_1 + \ell_2^2 \, \theta_1^2 \, \cos^2 \theta_1 \, a \, (\ell_1 \, \ell_2 \, \theta_3 \, \cos \theta_1, \cos \theta_1) \right]
        Or) + (2 0,2000)+ 420, 5m201+ 2(40,00, 8m0, sin 0)+ (20, sin)
       Or
    : 1/2m[[lizo,2 (sin2 01+ cos20,)] + [lizo,2 (sin2 ort cos20)) + (zio), (sin20,+
       (05282) + 29, (20, (cos 01. (05 02 + 810 01 - 810 02)]]
T = 1/2m, [ 1,20,2]+1/2m2 (1,20,2+1,20,2+26120,0,005 (0,-0))
                              -D lagrange
      = 1/2 m1 (812 812) + 1/2 m2 (828,2+8,202 + 2 e182 0102 cos Co1-02) +
```

((mitmz) glicos oi - mglicos oi)

Tunnlem pungsi terholop (B, 00, 101,01)

$$\frac{\mathsf{d} f}{\mathsf{d}} \left(\frac{30!}{5!} \right) - \frac{30!}{5!} = 0$$

21: milizai + mzlizai + zlili 0, 2 cos (01-02)

11 = - milili Dio, in (01-02) - (mitmz) 94 sino

id (21): mili² 0, + mili² 8, + mili² 8, cos (01-02) - mili² 0, cm (01-02). (01-01)

mili2 0, + mali20, tos (0,-02) - malil 10, sin (01-02) (0,-0) m261620,0, sn (01-01) - (mitm2) ger sindi = 0 (mitmz) lizo, + mililio, cos (0,-02) - mililio, oz cin (0,-02) + mi lilio, Sin (0, -02) = m2lili di 828in (0,-02) - (mitm2) glisin 0, =0 (mitm2) li di + m2lidi cos (0,-02) - m2lidio, sin (0,-02) +m2lioi Sin (0,-0,) + mzer (20,0, sin (0,-0)) - (mitm)) g sinti)=0 (mi+ mz) 40° + mz ez 0°2 ws (A-Bz) + mzez0° sin (01-02) - (hifmz) g 817 Q 20 2m-libi + molzbi - (2m) go = 0

2medi + mlo 2 - 2m 201 = 0

L = 1/2miliza, + 1/2 m2 (ei26, + e, 20; tzeie, 0,0, cosco1-02) + (mitmz) geismon +mzgezanoi

21 = m2 (70; + m2 (1/20, cos (0, -0))

28,

21 : -molilio, sin (0,0) -m29lisinos

(21) = m2li 02 +m2lilio, cos(0,-0) - m2lilioisin(0-0).(01-02)

m, e, t 0, + m, e, e, e, cos (0,-0) - m, e, e, e, sin (0, -0) + m, el 2 0, 0, 817(01-05) + m2 (16, 80, 817(01-0,) - m2 gels 81001 = 0 m2 (20, + m2 (10, 00) (01-01) - m2 (10, 817(01-01) + m2 (10, 817(01-01) + mzerdið, sin (01-01) - mzgan D, = 0 malio, + ma lidi cos (01-02) - malioi sun (01-02) -magsin 0>0 mlo; + medi - m go; = 0 m (80=+ 10, -90)=0