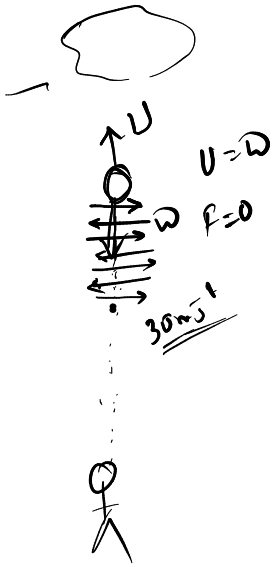


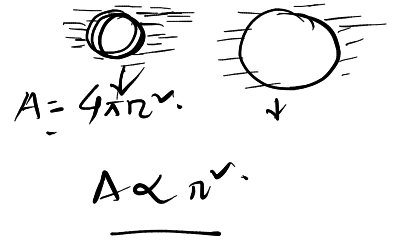
ପ୍ରାକୃତିକ ବିକାଶନୀୟତା :-



① ତରଙ୍ଗ ଚାଳନା ଦ୍ରବ୍ୟ, $v \propto \frac{1}{\rho}$

② ଯାନ୍ତ୍ରିକ $v \propto \frac{1}{\sqrt{\mu}}$

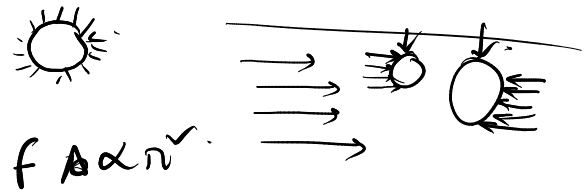
③ ଗ୍ୟାସ୍ $v \propto \frac{1}{\sqrt{\mu}}$
 $\hookrightarrow v \propto \frac{1}{\sqrt{r \mu}}$



ଯାନ୍ତ୍ରିକ

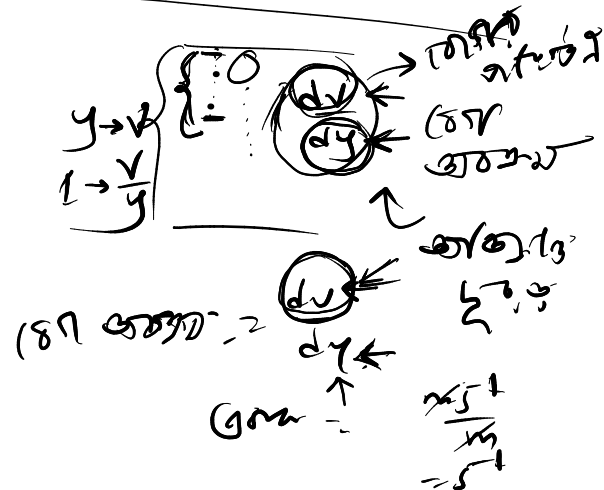
ପ୍ରାକୃତିକ ବିକାଶନୀୟତା ଓ ଯାନ୍ତ୍ରିକ ବିକାଶନୀୟତା ମଧ୍ୟରେ ଥିବା ପାର୍ଥକ୍ୟ ଓ ସମାନତା

ଯାନ୍ତ୍ରିକ ବିକାଶନୀୟତା
 $F \propto A$
 $F \propto \frac{dv}{dy}$



$$F \propto A \frac{dv}{dy}$$

$$F = \eta A \frac{dv}{dy}$$



ଯାନ୍ତ୍ରିକ

$$\eta = \frac{F}{A} \times \left(\frac{dy}{dv} \right)$$

if $\frac{dy}{dv} = 1$ & $A=1$

ତେଣୁ, $\eta = F$

ଯେତେବେଳେ ଯାନ୍ତ୍ରିକ ବିକାଶନୀୟତା ଓ ପ୍ରାକୃତିକ ବିକାଶନୀୟତା ମଧ୍ୟରେ ପାର୍ଥକ୍ୟ ଥାଏ, ତେବେ ଯାନ୍ତ୍ରିକ ବିକାଶନୀୟତା ଗୁଣାଯାଇଥାଏ।

$$\eta = \frac{N}{m^2} \frac{m}{ms^{-1}} \quad \frac{kg\,ms^{-2}}{m^2} \frac{m}{ms^{-1}}$$

$$= Nm^{-2}s$$

$$= Nm^{-2}$$

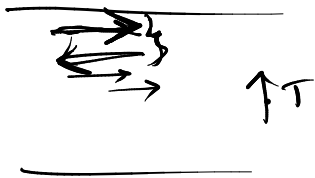
$$= Pa\,s \quad (\text{ମାପ})$$

$$kg\,m^{-1}s^{-1}$$

$$10^8 \text{ ମାପ} = 10 \text{ Pa.s}$$

ସାନ୍ଦ୍ରତା ପ୍ରତି ସମ୍ବନ୍ଧୀୟ ପ୍ରଶ୍ନ:-

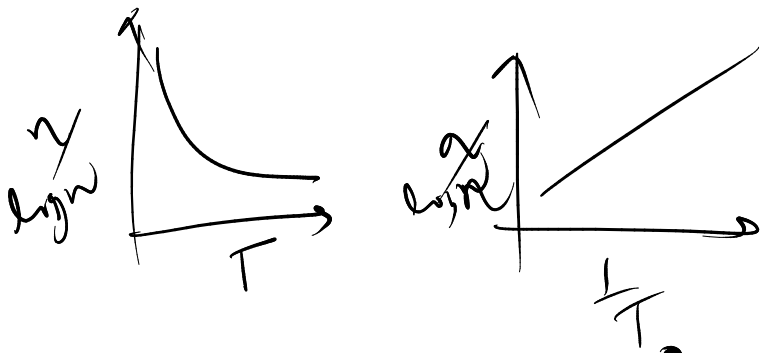
① ଚିତ୍ର:



ଉପରୋକ୍ତ ସମ୍ବନ୍ଧ ଆ.ପ୍ରା
 ଏହା ପ୍ରତି 1 ଧରା
 ସାନ୍ଦ୍ରତା ସହ ସମ୍ବନ୍ଧୀୟ ସାନ୍ଦ୍ରତା
 ସହ 1/2
 $\log \eta = A + \frac{B}{T}$

$$\log \eta \propto \frac{1}{T}$$

$$\eta \propto \frac{1}{T}$$



② ଚିତ୍ର:

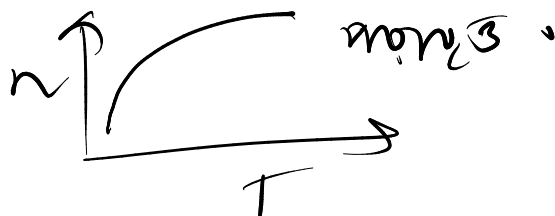
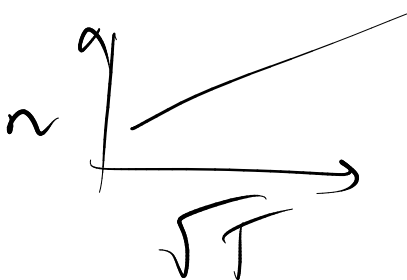


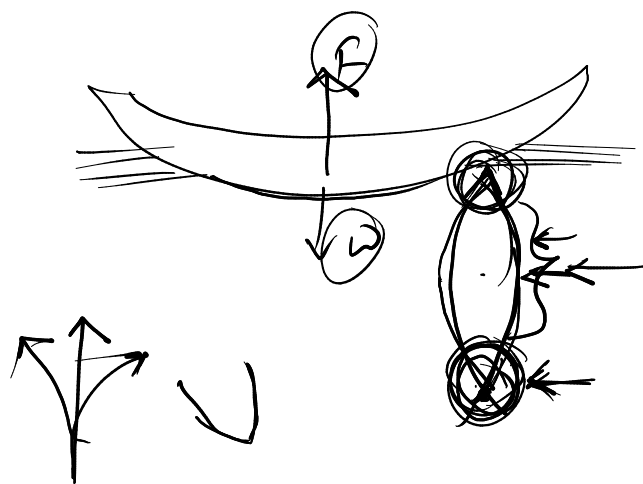
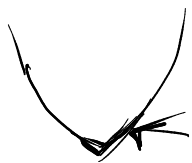
$$\eta \propto c$$

$$\eta \propto \sqrt{T}$$

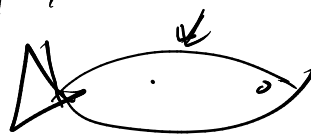
$$c = \sqrt{\frac{3RT}{M}}$$

$$c \propto \sqrt{T}$$





$F \propto W$



$F \propto A$

$$F \propto n \leftarrow F \propto A \frac{dv}{dy}$$

$$n \propto n \quad F \propto \frac{dv}{dy}$$

ଅନୁମାନ କର :-

$\checkmark F \propto \checkmark \eta \checkmark$

$F \propto \checkmark \leftarrow F \propto n$

$F \propto v \checkmark [v \text{ ଶୀଘ୍ର ବଢ଼ିବା}]$



$\eta = 10$



$\eta = 100$



$F \propto \eta \pi v$

$F = (K) \eta \pi v$

$F = 6\pi \eta r v$

$r \rightarrow m$
 $v \rightarrow m s^{-1}$
 $\eta \rightarrow m^{-1} s^{-1}$

$F = \eta A \frac{dv}{dy}$

$\eta \rightarrow m^{-1} s^{-1}$

$\underline{F} \propto \eta \overset{\downarrow}{x} \overset{\downarrow}{y} \overset{\downarrow}{v}$

$F \propto \eta r v$

$kg m s^{-2} = (kg m^{-1} s^{-1})^x (m)^y (m s^{-1})^z$

$= kg^x m^{-x} s^{-x} m^y m^z s^{-z}$

$kg^1 m^1 s^2 = kg^x m^{-x} m^{x+y+z} s^{-x-z}$

$x=1, y=1, z=2$

$N m^{-2} s$

$kg m^{-1} s^{-1}$

$kg m^{-1} s^{-1}$

$$x=1$$

$$\begin{aligned} -x - z &= -2 \\ -1 - z &= 0 - 2 \\ z &= 1 \end{aligned}$$

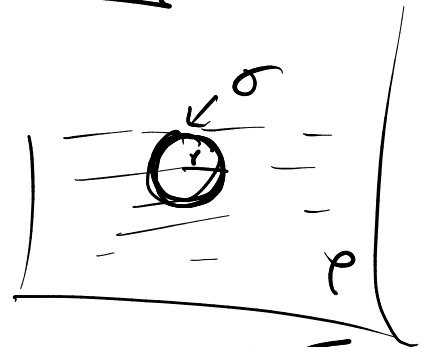
$$-x + y + z = 1$$

$$\begin{aligned} -1 + y + 1 &= 1 \\ y &= 1 \end{aligned}$$

$$\begin{aligned} F &\propto v^{\alpha} \\ F &\propto r^{\gamma} \\ F &\propto \eta^z \end{aligned}$$

$$F = 6\pi\eta rv$$

ପ୍ରାଚୀନ ଚଳ

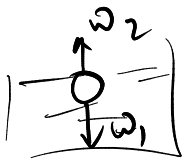


$$\text{ଭାର} = \frac{4}{3}\pi r^3 \rho$$

$$\sigma = \frac{4}{3}\pi r^3 \times \rho$$

$$\text{ଓଡ଼ିଆ} = \frac{4}{3}\pi r^3 \times g$$

$$\text{ଫ୍ଲୋଟିଂ ଫୋର୍ସ} = \frac{4}{3}\pi r^3 \times \rho$$



$$\omega_1 - \omega_2$$

$$50\%$$

$$10\%$$

$$40\%$$

$$\underline{\underline{F}} = \text{ଓଡ଼ିଆ ଓଡ଼ିଆ} - \text{ଫ୍ଲୋଟିଂ ଫୋର୍ସ}$$

$$39\%$$

$$6\pi\eta rv = \frac{4}{3}\pi r^3 \sigma g - \frac{4}{3}\pi r^3 \rho g$$

$$6\pi\eta rv = \frac{4}{3}\pi r^3 g (\sigma - \rho)$$

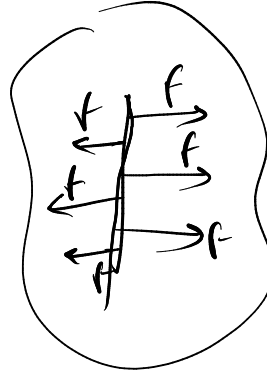
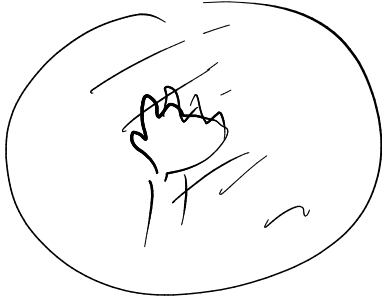
$$2 \times \frac{4}{3}\pi r^3 g (\sigma - \rho)$$

$$v =$$

$$36\pi\eta r^2$$

$$v = \frac{2}{9\eta} r^2 g (\sigma - \rho)$$

ସ୍ଥିତି 3 ସ୍ଥିତି



$$L \rightarrow F$$

$$1 \rightarrow \boxed{\frac{F}{L} = T}$$

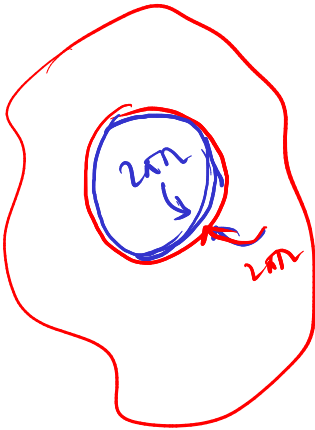
ସ୍ଥିତି



$$2L \rightarrow F$$

$$1 \rightarrow \boxed{\frac{F}{2L} = T}$$

ସ୍ଥିତି



$$4\pi r \rightarrow F$$

$$1 \rightarrow \frac{F}{4\pi r} = T$$

ଏହା ଏକ ଗୋଲ ଗୋଲ ଗୋଲ ଗୋଲ.



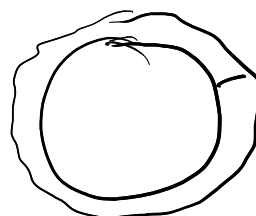
$$2\pi r \rightarrow F$$

$$1 \rightarrow \frac{F}{2\pi r} = T$$

ସ୍ଥିତି

- ① ଏହା ସ୍ଥିତି ←
- ② " ସ୍ଥିତି ←
- ③ " ଏହା

ସ୍ଥିତି



$$\Delta A \rightarrow W$$

$$1 \rightarrow \frac{W}{\Delta A} = E$$

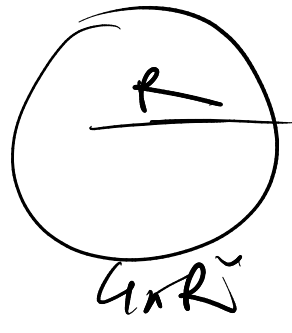
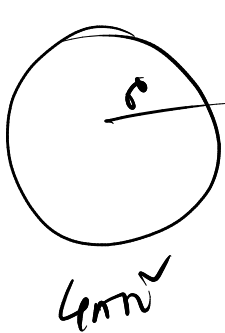
$$T = \frac{F}{L}$$

$$E = \frac{W}{\Delta A}$$

$$= \frac{F \cdot x}{L \cdot x}$$

$$= \frac{F}{L} = T$$

ଉତ୍ତରୀୟ ଓ ଉତ୍ତରୀୟର ମଧ୍ୟ ସମାନ ।



$$\Delta A = 4\pi R^2 - 4\pi r^2$$

T ଓ = something.

W = ?

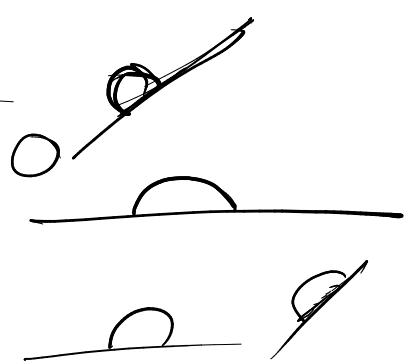
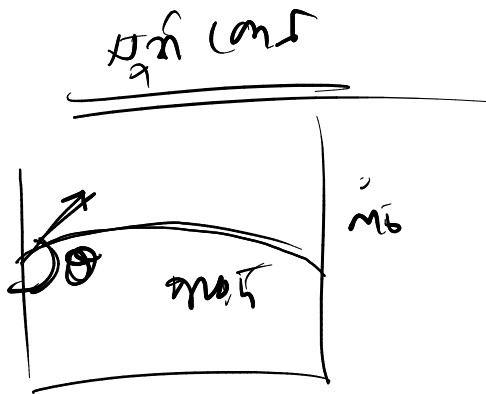
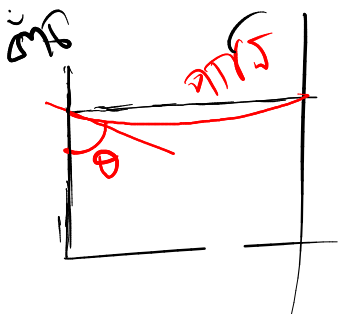
$$E = \frac{W}{\Delta A}$$

$$W = E \Delta A$$

$$W = E \Delta A$$

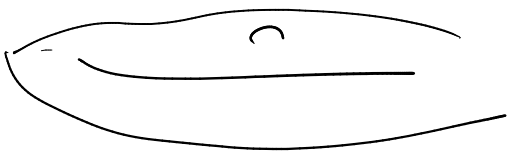
$$= T \Delta A$$

$$= () ()$$

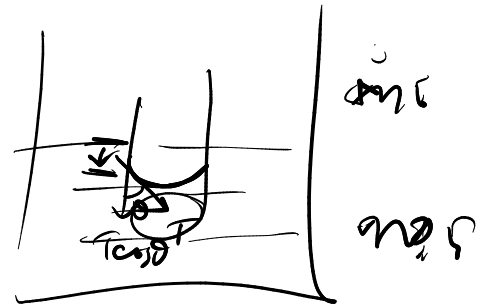
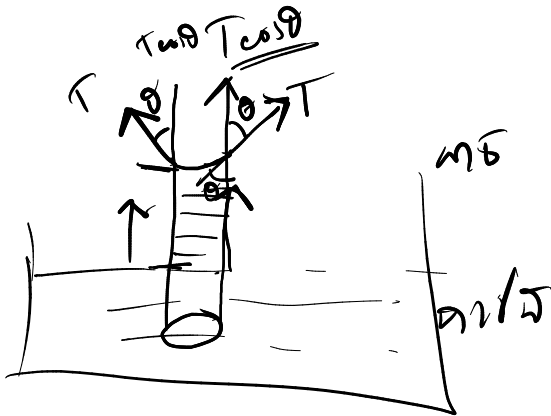


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ଉତ୍ତରୀୟ

ଉତ୍ତରୀୟ , ଉତ୍ତର , ଉତ୍ତରୀୟ
ଉତ୍ତରୀୟ



~~ଅନୁସନ୍ଧାନ~~
 ଚାଲିଥିବା କାର୍ଯ୍ୟର ଉପ
 ଲବ୍ଧି



$$2T \cos \theta = \boxed{h r \rho g}$$

$$\boxed{\frac{2T \cos \theta}{r \rho g} = h}$$

$\theta \rightarrow 0$ $\cos \theta \approx 1$

$$h = \frac{2T}{r \rho g} \quad T = \frac{h r \rho g}{2}$$