1. P_1; P_2 = дененің суйықтағы салмағы P_{0_1}; P_{0_2} - дененің ауадағы салмағы.

Берілгені:
$P_1 = \frac{P_{0_1}}{2}$
$P_2 = \frac{P_{0_2}}{4}$
Табу керек:
$\frac{\rho_1}{\rho_2}$ - ?

Шешуі:
$F_A = P_{ауа} - P_{сұйық} = P_1 - P_2$ $P_1 = P_{0_1}$; P_{0_2} $P_2 = \frac{P_{0_1}}{2}$; $\frac{P_{0_2}}{4}$
① $F_{A_1} = P_{0_1} - \frac{P_{0_1}}{2} = \frac{2P_{0_1} - P_{0_1}}{2} = \frac{P_{0_1}}{2}$
② $F_{A_2} = P_{0_2} - \frac{P_{0_2}}{4} = \frac{4P_{0_2} - P_{0_2}}{4} = \frac{3P_{0_2}}{4}$ ③ $\frac{\rho_1}{\rho_2} = \frac{F_{A_2}}{F_{A_1}} = \frac{\frac{3}{4}P_{0_2}}{\frac{1}{2}P_{0_1}} = \frac{3}{4} \cdot \frac{2}{1} = 1,5$ есе

Жауабы: А дененің тығыздығы В дененің тығыздығынан 1,5 есе кем.

2. Берілгені:
$v_{ав} = 70 \frac{км}{сағ}$
қарсы ав = 20
ағыс ав = 15
Табу керек:
v_A = ?

$v_A = x$ $t = y$ $S = 20$; 15 $S = 2y$

① $\begin{cases} (70-x)y = 20 \\ (70+x)y = 15 \end{cases}$ $\begin{cases} (70-x)y = 20 \\ y = \frac{15}{70+x} \end{cases}$ $\begin{cases} (70-x)\left(\frac{15}{70+x}\right) = 20 \\ y = \frac{15}{70+x} \end{cases}$

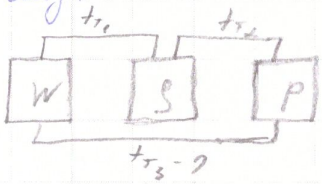
② $(70-x)\left(\frac{15}{70+x}\right) = 20$ $\frac{1050 - 15x - 1400 - 20x}{70+x} = 0$

$\frac{(70-x)15}{70+x} - 20 = 0$ $350 + 35x = 0$ $x = 10 \frac{км}{сағ}$ ③ $y = \frac{15}{70+x} = 0,1875 км = 187,5 м$

Жауабы: $v_A = 10 \frac{км}{сағ}$

3. Берілгені:
W - тежеш
S - тежеш
P - тежеш
$t_{0_1}(W) = 15°C$
$t_{0_2}(S) = 25°C$
$t_{T_1} = 22°C$
$t_{0_3}(S) = 30°C$
$t_{0_4}(P) = 45°C$
$t_{T_2} = 40°C$
$t_{0_5}(W) = 40°C$
$t_{0_6}(P) = 60°C$
Табу керек t_{T_3}?

Шешуі:



$22°C = \frac{15°C + 25°C}{x}$ $x_1 = x_2 = x_3$

$40°C = \frac{30°C + 45°C}{x}$

① $\begin{cases} \frac{15+25}{x} = 22 \\ \frac{45+30}{x} = 40 \end{cases}$ $\begin{cases} \frac{40 - 22x}{x} = 0 \\ \frac{75 - 40x}{x} = 0 \end{cases}$ $\begin{cases} 40 - 22x = 0 \\ 75 - 40x = 0 \end{cases}$

② $40 - 22x = 75 - 40x$ ③ $\frac{10+60}{x} = t_{T_3}$

$18x = 35$ $t_{T_3} = \frac{70}{1,94} = 36°C$ Жауабы: $t_{T_3} = 36°C$

$x = 1,94$

N1.

Дано:

$P_c = \frac{P_{a_1}}{2}$

$P_b = \frac{P_{a_2}}{4}$

$\frac{\rho_c}{\rho_b} = ?$

Решение:

$P_c = \frac{P_{a_1}}{2}$ $P_B = \frac{P_{a_2}}{4}$

$P = P_a - F_A$

$\frac{P_{a_1}}{2} = P_{a_1} - F_{a_1}$

$F_{a_1} = P_{a_1} - \frac{P_{a_1}}{2} = \frac{2P_{a_1} - P_{a_1}}{2} = \frac{1}{2} P_{a_1}$

$\rho_c g V = \frac{1}{2} m g$

$\rho_c V = \frac{\rho_{a_1} V}{2}$

$\rho_c = 2 \rho_a$

$F_{A_1} = P_{a_2} - \frac{P_{a}}{4} = \frac{4P_a - P_{a_1}}{4} = \frac{3}{4} P_a$

$\rho_b g V = \frac{3}{4} m_a g$

$\rho_b V = \frac{3}{4} \rho_a V$

$\rho_b = \frac{4}{3} \rho_a$

$\frac{\rho_c}{\rho_b} = \frac{2\rho_a}{\frac{4\rho_b}{3}} = \frac{3}{2} = 1{,}5$

Ответ: 1,5

N2

Given:
20 об. н. встр.
tав обог.
$v_{ob} = 70 \frac{km}{h}$

SI
$19{,}4 \frac{m}{c}$

Solution:

$\frac{S}{t_{ab}} = 19{,}4$

$S = 10 n S_4$

$v_A = \frac{19{,}4}{74}$

№3.

Дано:
$t_1 = 15°$
$t_2 = 25°$
$t_{п1} = 22°$
$t_3 = 30°$
$t_4 = 45°$
$t_{п2} = 40°$
$t_5 = 10°$
$t_6 = 60°$
$t_{п3} = ?$

Solution

$\Delta t = 5$

$Q_1 = cm\Delta t$

$Q_2 = cm\Delta t$

$Q_1 = Q_2$

$cm\Delta t = cm\Delta t$

$(x - 10) = (y - 60)$

+ : −

Ответ: 35°C

(ш) $t_1 = 15°C$ (S) $t_1 = 25$ $t_{1,2} = 27$

(SS) $t_3 = 50°C$ (Р) $t_4 = 45$ $t_{3,4} = 40$

(ш) $t_3 = 100°C$ (р) $t_6 = 60$ $t_{5,6} = ?$

$c_1 m_1 (22 - 15) + c_2 m_2 (22 - 25) = 0$

$7c_1 m = 3c_1 m_1$

$c_1 m_1 = \frac{7}{3} c_1 m_1$

$c_2 m_2 (40 - 30) + c_3 m_3 (40 - 45) = 0$

$10 c_2 m_2 = 5 c_3 m_2$ $2 c_2 m_2 = c_3 m_1$

$c_1 m_1 (t - 10) + m_3 c_3 (t - 60) = 0$

$c_1 m_1 (t - 10) + \frac{14}{3} c_1 m_1 (t - 60) = 0$

$t - 10 + \frac{14}{3} t - 140 = 0$

$\frac{17}{3} t = 150$ $t = \frac{150 \cdot 3}{17} = 26,5°C$

Ответ: 26,5 °C.

№4.

Дано:
$t_{1,2} = 70°C$
$t_{2,2} = 35°C$
$t_3 = ?$

Решение:

$Q_1 = Q_2$

$cm_1(70 - t) = cm_2(35 - t)$

$m = \rho V$ $V = SI$

$I_2 = 2I_1$

$S = \pi R^2$

$S_2 = 4\pi R^2$

$V_2 = 2 \cdot 4 \cdot \pi \cdot R \cdot I$

$m_2 = 8m_1$

14

Answer: 14 °C.

№1 $P_1=\frac{P_{01}}{2}$ $P_2=\frac{P_{02}}{4}$ $\frac{P_2}{P_1}$ - ? Ш: $P=P_0-F_A$ 1) $\frac{P_{01}}{2}=P_{01}-F_{A1}$ $F_{A1}=P_{01}-\frac{P_{01}}{2}=\frac{2P_{01}-P_{01}}{2}=\frac{1}{2}P_{01}$

$\rho_0 V g=\frac{1}{2}mg \Rightarrow \rho_0 V=\frac{\rho_1 V}{2} \Rightarrow \rho_1=2\rho_0$

2) $\frac{P_{02}}{4}=P_{02}-F_{A2} \Rightarrow F_{A2}=P_{02}-\frac{P_{02}}{4}=\frac{4P_{02}-P_{02}}{4}=\frac{3P_{02}}{4}$

$\rho_0 g V=\frac{3}{4}m_2 g$

$\rho_0 V=\frac{3}{4}\rho_2 V \Rightarrow \rho_2=\frac{4}{3}\rho_0$

3) $\frac{P_1}{P_2}=\frac{2\rho_0}{\frac{4\rho_0}{3}}=\frac{3}{2}=1,5$ есе.

Ж: 1,5 есе.

№3. (Ж) $t_1=15°C$ (С) $t_2=25°C$ $t_{1,2}=27°C$

(С) $t_3=30°C$ (Р) $t_4=45°C$ $t_{3,4}=40°C$

(Ж) $t_5=10°C$ (Р) $t_6=60°C$ $t_{5,6}-?$

Ш: 1) $c_1 m_1(22-15)+c_2 m_2(22-25)=0$.

$7c_1 m_1=3c_2 m_2 \Rightarrow c_2 m_2=\frac{7}{3}c_1 m_2$

2) $c_2 m_2(40-30)+c_3 m_3(40-45)=0$.

$10c_2 m_2=5c_3 m_3$ $2c_2 m_2=c_3 m_3$

$c_1 m_1(t-10)+m_3 c_3(t-60)=0$.

$c_1 m_1(t-10)+\frac{14}{3}c_1 m_1(t-60)=0$

$t-10+\frac{14}{3}t-\frac{140}{3}=0$

$\frac{17}{3}t=150 \Rightarrow t=\frac{150\cdot 3}{17}\approx 26,5°C$

Ж: 26,5°С.

№1

Дано:

$P_{c(возд)} = 2P_{c(жид)}$

$P_{в(возд)} = 4P_{в(жид)}$

$\frac{\rho_c}{\rho_в} = ?$

Решение:

$P_{c(жид)} = \frac{P_{c(возд)}}{2} = P_{c(возд)} - F'_A$

$P_{в(жид)} = \frac{P_{в(возд)}}{4} = P_{в(возд)} - F'_A$

$F'_A = \rho_ж g V_т$

$P = mg$, $m = V\rho$ $\Rightarrow P = V\rho g$

1) $\rho_ж g V_c = P_{c(возд)} - \frac{P_{c(возд)}}{2} = \frac{1 P_{c(возд)}}{2}$

$\rho_ж g V_c = \frac{1 V_c \rho_c g}{2}$;

$\rho_ж = \frac{1}{2}\rho_c$; $\rho_c = 2\rho_ж$

2) $\rho_ж g V_в = P_{в(возд)} - \frac{P_{в(возд)}}{4} = \frac{3 P_{в(возд)}}{4}$

$\rho_ж g V_в = \frac{3 V_в \rho_в g}{4}$

$\rho_ж = \frac{3}{4}\rho_в$; $\rho_в = \frac{4}{3}\rho_ж$.

$\frac{\rho_c}{\rho_в} = \frac{2\rho_ж}{1} \cdot \frac{4}{3\rho_ж} = \frac{2}{1} \cdot \frac{3\rho_ж}{4\rho_ж} = \frac{3}{2} = 1{,}5$.

Ответ: $\rho_c > \rho_в$ в 1,5 раза.

№2

Дано:

$v_{авт} = 70 \frac{км}{ч}$

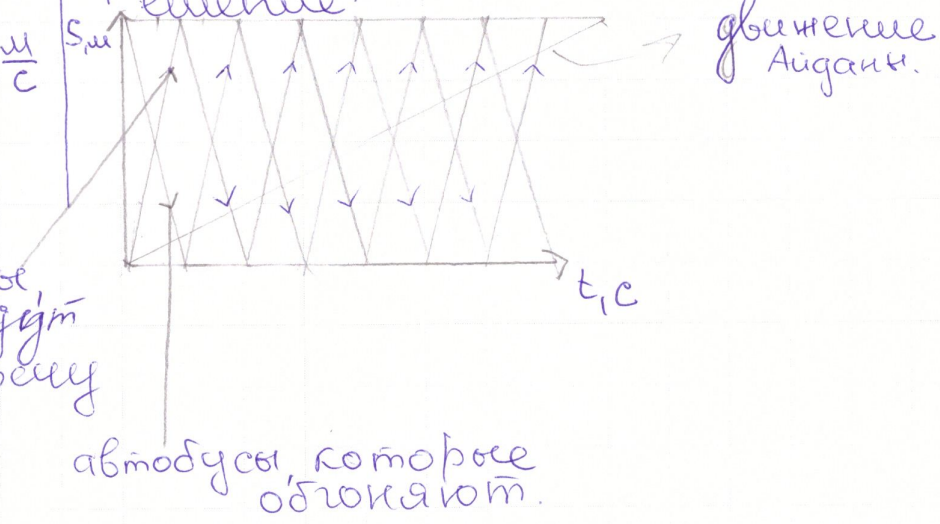
$n_1 = 20$

$n_2 = 15$

СИ

$19,4 \frac{м}{с}$

Решение:



№4

Дано:

$t_1 = 70°C$

$t_2 = 35°C$

$l_2 = 2l_1$

$S_2 = 2S_1$

$t_{o.c.} = ?$

Решение:

$Q_1 = Q_2 \quad cm_1\Delta t_1 = cm_2\Delta t_2$

$cm_1(70 - t_{o.c}) = cm_2(35 - t_{o.c})$

$70m_1 - m_1t = 35m_2 - m_2t$

$m = V\rho \quad \rho_1 = \rho_2$

$V = Sl \quad V_2 = 2l \cdot 4\pi R^2 = 8\pi R^2 l \Rightarrow$

$S = 4\pi R^2 \quad m_2 = 8m_1$

$70m_1 - m_1t = 280m_1 - 16m_1t$

$16m_1t - m_1t = 280m_1 - 70m_1$

$15m_1t = 210m_1$

$t = 14°C$

Ответ: 14°C

№3

Дано:

$t_1(w) = 15°$

$t_2(S) = 25°C$

$t_{p_1} = 22°C$

$t_3(S) = 30°C$

$t_4(P) = 45°C$

$t_{p_2} = 40°C$

$t_5(w) = 10°C$

$t_6(P) = 60°C$

$t_{p_3} = ?$

Решение:

$Q_1 - Q_2 = 0$

$c_1m_1(22 - 15) + c_2m_2(22 - 25) = 0$

$7c_1m_1 = 3c_2m_2 \Rightarrow c_2m_2 = \frac{7}{3}c_1m_1$

$c_2m_2(40 - 30) + c_3m_3(40 - 45) = 0$

$10c_2m_2 = 5c_3m_3 \Rightarrow c_3m_3 = 2c_2m_2$

$c_1m_1(t - 10) + c_3m_3(t - 60) = 0$

$c_1m_1(t - 10) + \frac{14}{3}c_1m_1(t - 60) = 0$

$t - 10 + \frac{14}{3}t - 280 = 0$

$\frac{17}{3}t = 290$

$t = 51,2°C$

Ответ: 51,2°C

Бер: №1

$P_1 = \frac{P_{01}}{2}$

$P_2 = \frac{P_{02}}{4}$

Т/к: $\frac{\rho_{01}}{\rho_{02}} - ?$

Шешуі: $\frac{P_{01}}{2} = P_1 - F_{A_1}$ $\quad F_{A_1} = P_1 - \frac{P_{01}}{2} = \frac{2P_1 - P_{01}}{2} = \frac{1}{2} P_{01}$

$\rho_0 g V = \frac{1}{2} m_1 g$

$\rho_0 V = \frac{\rho_1 V}{2} \Rightarrow \rho_1 = 2\rho_0$

$\frac{P_{02}}{4} = P_{02} - F_{A_2}$ $\quad F_{A_2} = P_{02} - \frac{P_{02}}{4} = \frac{4P_{02} - P_{02}}{4} = \frac{3P_{02}}{4}$

$\rho_0 g V = \frac{3}{4} m_2 g$

$\rho_0 V = \frac{3}{4} \rho_2 V \Rightarrow \rho_2 = \frac{4}{3} \rho_0$

$\frac{\rho_1}{\rho_2} = \frac{2\rho_0}{\frac{4\rho_0}{3}} = \frac{3}{2} = 1{,}5$ есе

Жауабы: 1,5 есе

№2

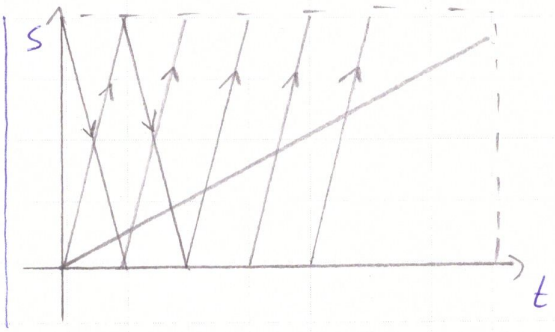
Берілгені:

$v_{20} - 70$ км/сағ

$v_{15} - 70$ км/сағ

$t_{20} = t_{15}$

Т/к: $v_{Aag} - ?$



№3

Берілгені:
$t_1 = 15°C$ (ж)
$t_2 = 25°C$ (с)
$t_{т_1} = 22°C$
$t_3 = 30°C$ (Б)
$t_4 = 45°C$ (Р)
$t_{т_2} = 40°C$
$t_5 = 10°C$ (ж)
$t_6 = 60°C$ (Р)
$t_{т_3} - ?$

Шешуі: $c_1 m_1 (22-15) + c_2 m_2 (22-25) = 0$

$7 c_1 m_1 = 3 c_2 m_2$

$c_2 m_2 = \frac{7}{3} c_1 m_1$

$c_2 m_2 (40-30) + c_3 m_3 (40-45) = 0$

$10 c_2 m_2 = 5 c_3 m_3$

$2 c_2 m_2 = c_3 m_3$

$c_1 m_1 (t-10) + c_3 m_3 (t-60) = 0$

$c_1 m_1 (t-10) + \frac{14}{3} c_1 m_1 (t-60) = 0$

$t - 10 + \frac{14}{3} t - 280 = 0$

$\frac{17}{3} t = 290$ $\quad t = \frac{290 \cdot 3}{17} = 51{,}2°C$

Жауабы: $51{,}2°C$

Бер: №4
$t_1 = 70°C$
$t_2 = 35°C$
Т/к: $t_{қ.о} - ?$
$l_2 = 2 l_1$

Шешуі: $Q_1 = Q_2$

$cm_1 \Delta t_1 = cm_2 \Delta t$

$\rho m_1 (70 - t_{қ.о}) = \rho m_2 (35 - t_{қ.о})$

$70 m_1 - m_1 t_{қ.о} = 35 m_2 - m_2 t_{қ.о}$

$m = V\rho$ $\quad \rho_1 = \rho_2$

$V = Sl$ $\quad V_2 = 2l \cdot 4\pi R^2 = 8\pi R^2 l$ $\quad S = \pi R^2$

$m_2 = 8 m_1$

$70 m_1 - m_1 t = 280 m_1 - 16 m_1 t$

$16 m_1 t - m_1 t = 280 m_1 - 70 m_1$

$15 m_1 t = 210 m_1$

$t = 14°C$

№ 1

Берілгені

$P_1 = \frac{P_{01}}{2}$

$P_2 = \frac{P_{02}}{4}$

$\frac{\rho_1}{\rho_2}$ - ?

Шешуі:

$P = P_0 - F_A$

1) $\frac{P_{01}}{2} = P_1 - F_{A1}$

2) $\frac{P_{02}}{4} = P_2 - F_{A2}$

1. $F_{A1} = {}^{2/}P_{01} - \frac{P_{01}}{2} = \frac{2P_{01} - P_{01}}{2} = \frac{1}{2} P_{01}$

$\rho_0 V g = \frac{1}{2} m_1 g$

$\rho_0 V = \frac{\rho_1 V}{2}$ $\rho_1 = 2\rho_0$

2. $F_{A2} = {}^{4/}P_{02} - \frac{P_{02}}{4} = \frac{4P_{02} - P_{02}}{4} = \frac{3P_{02}}{4} \Rightarrow$

$F_{A2} \Rightarrow \frac{3}{4} P_{02}$

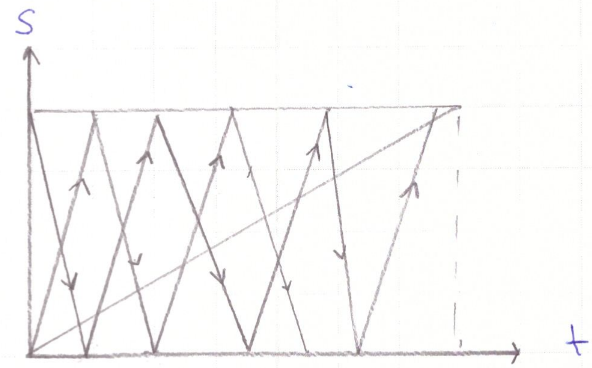
$\rho_0 V g = \frac{3}{4} m_2 g$

$\rho_0 V = \frac{3}{4} \rho_2 V$ $\rho_2 = \frac{4}{3} \rho_0$

$\frac{\rho_1}{\rho_2} = \frac{2\rho_0}{\frac{4}{3}\rho_0} = \frac{2}{\frac{4}{3}} = \frac{3}{2} = 1,5$ есе

Ж: 1,5 есе көп.

№ 2



Менің ойымша, Айдананың жылдамдығы 7 км/сағ. Өйткені, бірінші автобус қарама-қарсы оза алмады, Ал екіншісі уақытты сақтамай адамды озып кетті.

№ 3

Берілгені:

t_1 (W) = 15°C

t_2 (S) = 25°C

t_{m_1} = 22°C

t_3 (S) = 30°C

t_4 (P) = 45°C

t_{m_2} = 40°C

t_5 (W) = 10°C

t_6 (P) = 60°C

t_{m_3} = ?

Шешуі:

Егер формула $Q_1 - Q_2 = 0$

$C_1 m_1 (22-15) + C_2 m_2 (22-25) = 0$

$7 c_1 m_1 = 3 c_2 m_2$, $c_2 m_2 = \frac{7}{3} c_1 m_1$

$C_2 m_2 (40-30) + C_3 m_3 (40-45) = 0$

$10 c_2 m_2 = 5 c_3 m_3$, $c_3 m_3 = 2 c_2 m_2$

$c_1 m_1 (t-10) + c_3 m_3 (t-60) = 0$

$\cancel{c_1 m_1} (t-10) + \frac{14}{3} \cancel{c_1 m_1} (t-60) = 0$

$t - 10 + \frac{14}{3} t - 280 = 0$

$\frac{17}{3} t = 290$

$t = 51,2°C$

Жауабы: 51,2°C.

№ 4

Берілгені:

$t_1 = 70°C$

$t_2 = 35°C$

$S_2 = 2 S_1$

$l_2 = 2 l_1$

$t_{ағ.}$ - ?

Шешуі:

$Q_1 = Q_2 \Rightarrow c m_1 \Delta t_1 = c m_2 \Delta t_2$

$\cancel{c} m_1 (70 - t_{ағ.}) = \cancel{c} m_2 (35 - t_{ағ.})$

$70 m_1 - m_1 t = 35 m_2 - m_2 t$

$m = V \rho$ $\rho_1 = \rho_2$

$V = S l$ $V_2 = 2l \cdot 4\pi R^2 = 8\pi R^2 l \Rightarrow$

$S = 2\pi R^2$ $m_2 = 8 m_1$

$70 m_1 - m_1 t = 280 m_1 - 8 m_1 t$

№4

$16 m_1 t - m_1 t = 280 m_1 - 70 m_1$

$15 m_1 t = 210 m_1$

$t = 210 : 15 = 14°C$

Ответ: $14°C$.