Ф-11-4

$$V = \frac{m \cdot V_0}{m+M} \qquad \frac{(m+M)\cdot V}{2} = (m+M)\cdot g \cdot H$$

$$\frac{(m+M)\cdot m^2 \cdot V_0^2}{(2\cdot (m+M)^2)} = (m\cdot M)\cdot g \cdot H.$$

$$H = \frac{m^2 \cdot V_0^2}{(2\cdot g \cdot (M+m)^2)}.$$

6 б

2) $Q = -A_{тр}$.

$$E_к - E_к = A_{тр} = -Q \qquad Q = E_к - E_к$$

$$E_к = \frac{mv^2}{2} \qquad E_к = \frac{(M+m)u^2}{2} = \frac{m^2v^2}{2(M+m)}$$

$$Q = \frac{mv_0^2}{2} - \frac{m^2v_0^2}{2(M+m)} = \frac{Mmv^2}{2(M+m)}$$

6 б

$$\eta = \frac{Q}{E_к} = \frac{M}{M+m}.$$

3) $PV = C \qquad P = 2P_0 \Rightarrow h = 10\,м$

$$\rho g h = 10^5.$$

Дано: $P = 100$ кПа, $\rho = 1000$ кг/м^3, $n = 2$, $T = \text{const}$. $R - ?$

3 б

4) $P = UI$; $U = \frac{\varepsilon R}{R+r}$; $R = \frac{P}{I^2}$; $U = \frac{P}{I}$; $\frac{P}{I} =$

$$= \frac{\varepsilon \frac{P}{I^2}}{\frac{P}{I^2} + r} \qquad \varepsilon I = P + rI^2; \quad \varepsilon \frac{P}{I} + rI$$

Дано: $\varepsilon = 15$ В, $h = 10\,см = 0{,}1\,м$, $m = 20\,г = 0{,}02\,кг$, $g = 10\,м/с^2$

$$\varepsilon = \frac{135}{15} + r \cdot 15 \qquad \varepsilon = \frac{64{,}8}{6} + r \cdot 6$$

$P_1 = 135$ Вт, $I_1 = 6$ А, $P_2 = 64$, $\varepsilon - ?$, $r - ?$

$$r = \frac{9 - 10{,}8}{6 - 15} = 0{,}2\,Ом; \quad \varepsilon = \frac{135}{15} + 0{,}2 \cdot 15 = 12\,В$$

8 б

Правильно — **Ф-25 б**