

Олимпиада Физтех, февраль 2021

Физика, 11 класс. Ответы к вариантам 11-05, 11-06, 11-07, 11-08

Вар. 11-05	Вар. 11-06	Вар. 11-07	Вар. 11-08
№1	№1	№1	№1
1) $a = g \operatorname{tg} \beta = \frac{3}{4} g$	1) $a = g \operatorname{tg} \beta = \frac{5}{12} g$	1) $a = g \operatorname{tg} \beta = \frac{4}{3} g$	1) $a = g \operatorname{tg} \beta = \frac{12}{5} g$
2) $a_0 = \frac{3}{8} g$	2) $a_0 = \frac{11}{60} g$	2) $a_0 = \frac{38}{39} g$	2) $a_0 = \frac{29}{30} g$
3) $t = \sqrt{\frac{20H}{3g}}$	3) $t = \sqrt{\frac{130H}{11g}}$	3) $t = \sqrt{\frac{65H}{19g}}$	3) $t = \sqrt{\frac{156H}{29g}}$
№2	№2	№2	№2
1) $\frac{T_1}{T_2} = \sqrt{3}$	1) $\frac{T_1}{T_2} = \sqrt{2}$	1) $\frac{T_1 - T_2}{T_2} = \sqrt{3} - 1$	1) $\frac{T_1 - T_2}{T_2} = \sqrt{2} - 1$
2) $\operatorname{tg} \alpha_K = \sqrt{\frac{3}{5}}$	2) $\operatorname{tg} \alpha_K = \sqrt{\frac{5}{7}}$	2) $\operatorname{tg} \alpha_K = \sqrt{\frac{3}{5}}$	2) $\operatorname{tg} \alpha_K = \sqrt{\frac{5}{7}}$
3) $\frac{A}{A_{12}} = \frac{4 - 4\sqrt{3} + \pi}{1 - \sqrt{3} + \pi} \approx 0,09$	3) $\frac{A}{A_{12}} = \frac{7\pi - 36(\sqrt{2} - 1)}{7\pi - 6(\sqrt{2} - 1)} \approx 0,37$	3) $\eta = \frac{3(4 - 4\sqrt{3} + \pi)}{2[3\sqrt{15} - 6\sqrt{3} + 2\pi - 6\alpha_K]} \approx 0,09, \alpha_K = \operatorname{arc} \operatorname{tg} \sqrt{3/5}$	3) $\eta = \frac{7\pi - 36(\sqrt{2} - 1)}{3[4\sqrt{35} - 12\sqrt{2} + 3\pi - 8\alpha_K]} \approx 0,22, \alpha_K = \operatorname{arc} \operatorname{tg} \sqrt{5/7}$
№3	№3	№3	№3
1) $I'_L = \frac{1}{3} \frac{E}{L}$	1) $I'_L = \frac{1}{4} \frac{E}{L}$	1) $I'_L = \frac{1}{5} \frac{E}{L}$	1) $I'_L = \frac{1}{6} \frac{E}{L}$
2) $Q = \frac{1}{6} CE^2$	2) $Q = \frac{1}{8} CE^2$	2) $Q = \frac{1}{10} CE^2$	2) $Q = \frac{1}{12} CE^2$
3) $I = 3I_0$	3) $U_R = \frac{4}{3} I_0 R$	3) $I = 5I_0$	3) $U_R = \frac{6}{5} I_0 R$
№4	№4	№4	№4
1) $a_0 = \frac{B^2 V_0 d^2}{mR}$	1) $a_0 = \frac{B^2 V_0 d^2}{mR}$	1) $a_0 = \frac{B^2 V_0 d^2}{mR}$	1) $a_0 = \frac{B^2 V_0 d^2}{mR}$
2) $V_1 = V_0 - \frac{B^2 d^3}{3mR}$	2) $V_1 = V_0 - \frac{B^2 d^3}{4mR}$	2) $V_1 = V_0 - \frac{B^2 d^3}{5mR}$	2) $V_1 = V_0 - \frac{2B^2 d^3}{3mR}$
3) $V_2 = V_0 - \frac{2B^2 d^3}{3mR}$	3) $V_2 = V_0 - \frac{B^2 d^3}{2mR}$	3) $V_2 = V_0 - \frac{2B^2 d^3}{5mR}$	3) $V_2 = V_0 - \frac{4B^2 d^3}{3mR}$
№5	№5	№5	№5
1) $x = 1/8 \text{ м} = 12,5 \text{ см}$ $D_1 = -8 \text{ дптр}$	1) $x = 1/7 \text{ м} = 14 \text{ см}$ $D_1 = -7 \text{ дптр.}$	1) $x = 1/6 \text{ м} = 17 \text{ см}$ $D_1 = -6 \text{ дптр}$	1) $x = 1/5 \text{ м} = 20 \text{ см}$ $D_1 = -5 \text{ дптр}$
2) $D_3 = -6 \text{ дптр}$	2) $D_3 = -5 \text{ дптр}$	2) $D_3 = -4 \text{ дптр}$	2) $D_3 = -3 \text{ дптр}$