April 3, 2018

1) answers #1-4 Acceleration

2) cont review

Quiz tomorrow!!!

Answers
Acceleration Quiz Review

1. $v_o = 33 m/s$, $a = -9.81 m/s^2$, $d_o = 142 m$, $v_f = 0$

a) $v_f^2 = v_o^2 + 2a(d_f - d_o)$
$(0)^2 = (33)^2 + 2(-9.81)(d_f - 142)$
$0 = 1089 + (-19.62)(d_f - 142)$
$0 = 1089 + -19.62 d_f + 2786$
$0 = 3875 + -19.62 d_f - 3875$
$\frac{-3875}{-19.62} = \frac{-19.62 d_f}{-19.62}$
$198 m = d_f$

b) $t = ?$, $v_f = -55 m/s$, $v_o = 33 m/s$, $a = -9.81 m/s^2$
$a = \frac{v_f - v_o}{t}$
$-9.81 = \frac{-55 - 33}{t}$
$-9.81 t = \frac{-88}{t} t$
$\frac{-9.81 t}{-9.81} = \frac{-88}{-9.81}$
$t = 8.97 s$

c) $v_f = ?$, $v_o = 33 m/s$, $d_o = 142 m$, $d_f = 25 m$, $a = -9.81 m/s^2$
$v_f^2 = v_o^2 + 2a(d_f - d_o)$
$v_f^2 = (33)^2 + (2)(-9.81)(25 - 142)$
$v_f^2 = 1089 + (-19.62)(-117)$
$v_f^2 = 1089 + 2296$
$v_f^2 = 3385$
$v_f = 58.2 m/s$

2. $v_o = 175 m/s$ [E]
$v_f = 315 m/s$ [W] (-315)
$a = 15 m/s^2$ [W] (-15)

distance east
$v_o = 175$, $v_f = 0$, $a = -15$, $d_o = 0$, $d_f = ?$
$v_f^2 = v_o^2 + 2a(d_f - d_o)$
$0^2 = (175)^2 + (2)(-15)(d_f - 0)$
$0 = 30625 - 30 d_f - 30625$
$\frac{-30625}{-30} = \frac{-30 d_f}{-30}$
$1021 m = d_f$

distance west
$v_o = 0$, $v_f = -315$, $a = -15$, $d_o = 0$, $d_f = ?$
$v_f^2 = v_o^2 + 2a(d_f - d_o)$
$(-315)^2 = 0^2 + 2(-15)(d_f - 0)$
$99225 = 0 + (-30)(d_f)$
$\frac{99225}{-30} = \frac{-30 d_f}{-30}$
$-3308 m = d_f$

total $= 1021 + 3308$
$= 4329 m$

3. $v_o = 120 km/h$ [E]
$a = -5.6 m/s^2$
$v_f = 90 km/h$ [E]
$t = ?$

$a = \frac{v_f - v_o}{t}$
$-5.6 = \frac{90 - 120}{t}$
$-5.6 t = \frac{-30}{t} t$
$\frac{-5.6 t}{-5.6} = \frac{-30}{-5.6}$
$t = 5.4 s$

4. $v_o = 25 m/s$ (up), $a = -9.81 m/s^2$, $d_o = 0 m$, $v_f = 0 m/s$, $t = ?$

a) $a = \frac{v_f - v_o}{t}$
$-9.81 = \frac{0 - 25}{t}$
$-9.81 t = \frac{-25}{t} t$
$\frac{-9.81 t}{-9.81} = \frac{-25}{-9.81}$
$t = 2.5 s$

b) $d_f = d_o + v_o t + \frac{1}{2} a t^2$
$d_f = 0 + (25)(2.5) + \frac{1}{2}(-9.81)(2.5)^2$
$d_f = 0 + 62.5 + -30.7$
$d_f = 31.8 m$

Complete Quiz Review #5-8

and

MC questions