A+ Academy – Online Teaching

Topic : physics 6102001

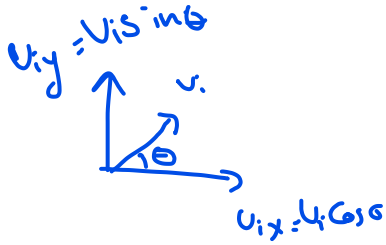
تحضيري /جامعة القدس(ابوديس)

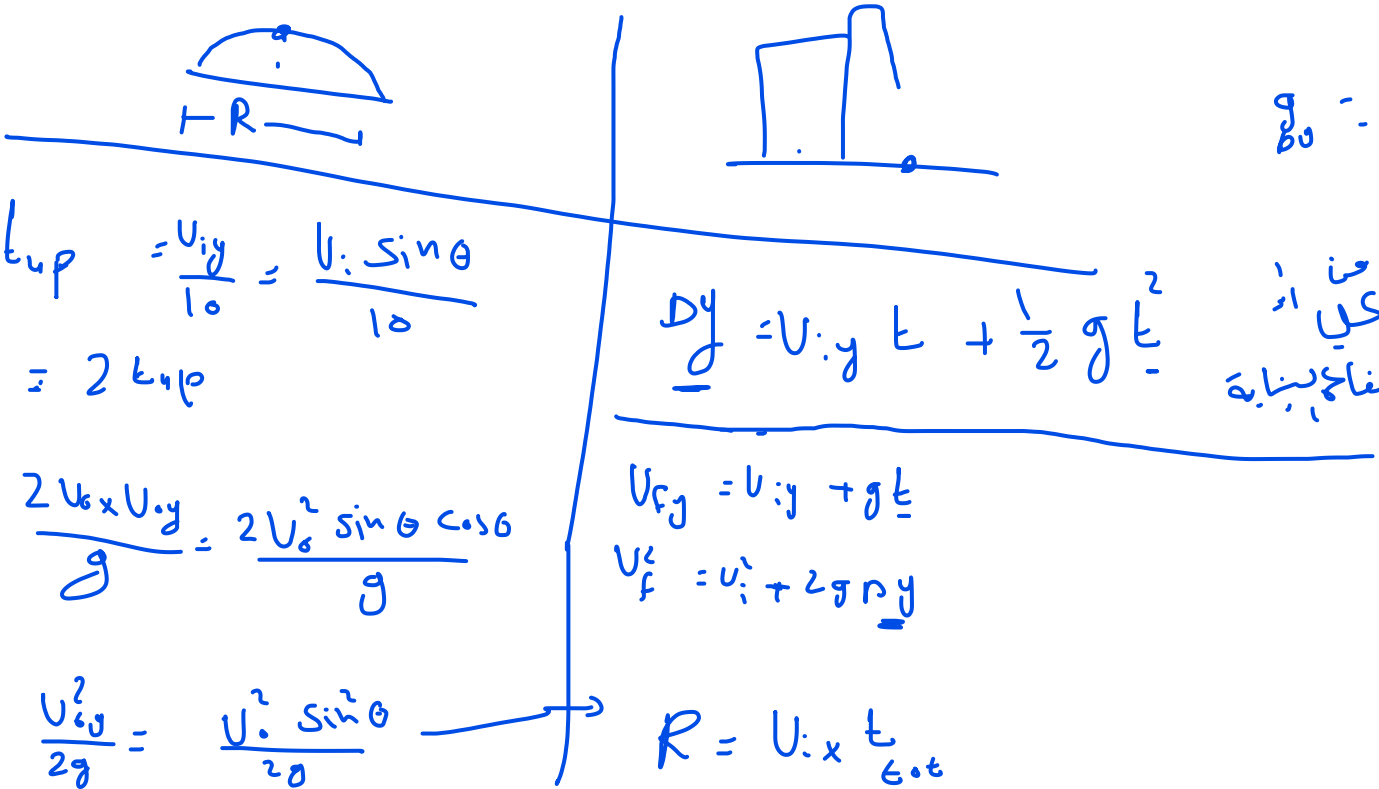
Instructor:Hamza Ahmad

Quiz Chapter 3

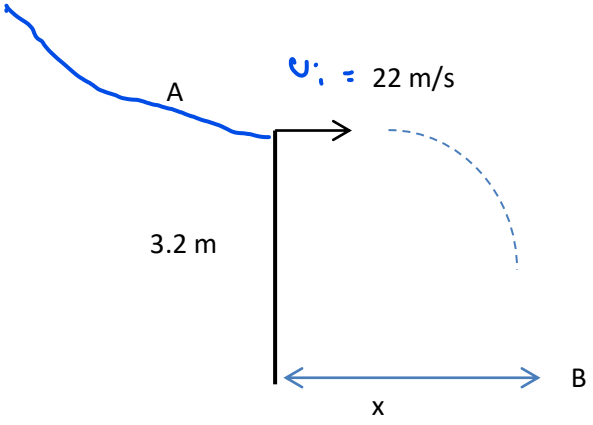
مراجعة

WhatsApp: +79160714652





Q:1 A skier leaves the end of the horizontal ski jump at 22 m/s and falls 3.2 m before landing. Neglecting friction, the time needed to hit the ground is



A) 0.65 s
B) 1.2 s
C) 0.4 s
D) 0.8s

$\Delta y = U_{iy} t + \frac{1}{2} g t^2$

$U_{ix} = 22 m/s$

$U_{iy} = 0$

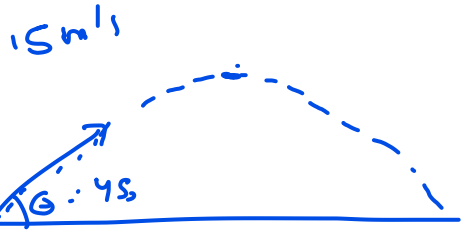
$3.2 = \frac{1}{2} 10 \, t^2$

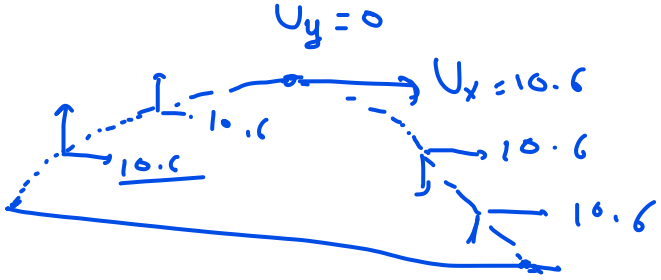
$t^2 = \frac{3.2}{5} = 0.64$

$t = \sqrt{0.64} = 0.8 \, s$

Q:2 A projectile is fired with an initial velocity of 15 m/s at angle $\Theta = 45^o$ with horizontal. Its speed at highest point is

A) 8.66 m/s
B) 10.6 m/s
C) 0 m/s
D) 15 m/s





$U_{ix} = 15 \cos 45 = 10.6$

$U_{iy} = 15 \sin 45 = 10.6$

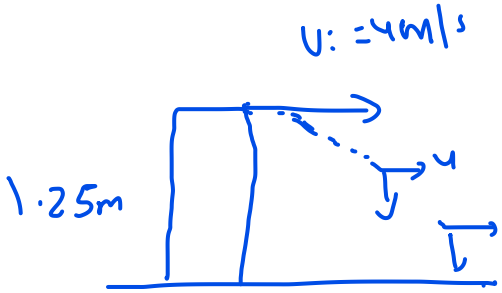
$\vec{U} = 10.6 j + 0 j$

$\vec{U_f} = 10.6 i - 10.6 j$

speed $= \sqrt{(10.6)^2} = 10.6$

Q:3 A ball is thrown horizontally with a speed of 4 m/s from an edge of a table with height of 1.25 m above the ground, the magnitude of the maximum velocity of the ball equal to

A) 4 m/s
B) 7.1 m/s
C) 6.4 m/s
D) 4.8 m/s



$v_{fy}^2 = v_{iy}^2 + 2gdy$

$v_f^2 = 0 + 2 \times 10 \times 1.25$

$v_f^2 = 25$

$v_f = 5$

$v_f = 4i - 5j$

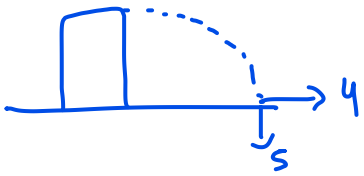
$|v_f| = \sqrt{4^2 + (-5)^2}$

$= \sqrt{16 + 25}$

$= \sqrt{41} = 6.4 m/s$

$v_{ix} = 4$

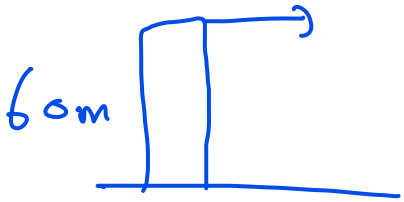
$v_{iy} = 0$



Q: 4 A student stand at the top of the building edge and throws a stone horizontally over the edge a speed of 20 m/s. the edge of the building is 60 m above the ground, how long much time dose the stone needed to strike the ground

A) 4.5 s
B) 2.5 s
C) 3.5 s
D) 1.5 s

$v_i = 20 m/s$



$dy = v_{iy}t + \frac{1}{2}gt^2$

$60 = \frac{1}{2} \times 10 \times t^2$

$\frac{60}{5} = t^2$

$t = \sqrt{12} = 3.5 s$

$v_{ix} = 20$

$v_{iy} = 0$

Q:5 A ball is kicked with an initial velocity at an angle of 35^o to the horizontal. Neglecting air resistance, what is the vertical component of its acceleration as its travels in its trajectory?

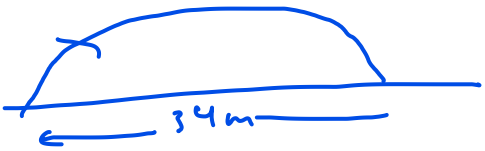
A) g sin35 downward
B) g cos35 downward
C) g downward
D) g upward

$a_y = -g$

$a_x = 0$

Q:6 A projectile is ejected with a speed of 20 m/s at an angle of 30^o above the horizontal, the range of this projectile is

A) 34 m
B) 20 m
C) 15 m
D) 50 m



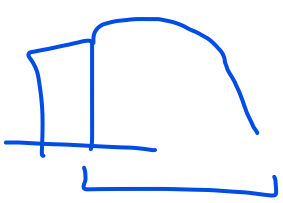
$R = \frac{2U_0^2 \sin\theta \cos\theta}{g}$

$U_i = 20$ m/s

$\theta = 30$

$= \frac{2(20)^2 \sin 30 \cos 30}{10}$

$= 34$ m



$R = U_{ix} t_{tot}$

$Dy = U_{iy} t_i + \frac{1}{2} g t_i^2$

Q:7 A stone is thrown with an initial speed of 15 m/s at an angle of 53° above the horizontal from the top of a 35 m building. If g = 9.8 m/s^2 and air resistance is negligible, then what is the magnitude of the vertical velocity component of the rock as it hits the ground?

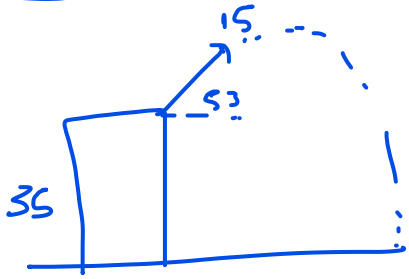
A) 9.0 m/s B) 18 m/s C) 26 m/s D) **29 m/s**

$V_{fy}^2 = V_{iy}^2 + 2g\Delta y$

$= (12)^2 + 2(-10)(-35)$

$= 144 + 700$

$V_f = \sqrt{844}$



$V_{ix} = 15\cos 53$

$V_{iy} = 15\sin 53 = 12$

Q:8 Ignoring air resistance, the horizontal component of a projectile's velocity

A) is zero.

B) remains constant.

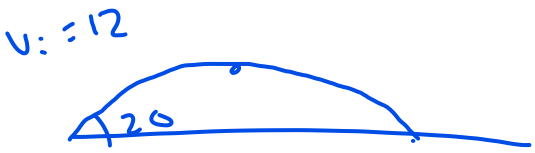
C) continuously increases.

D) continuously decreases.

Q:9 A jumper in the long-jump goes into the jump with a speed of 12 m/s at an angle of 20° above the horizontal. How long is the jumper in the air before returning to the Earth?

A) 0.21 s B) 0.42 s C) **0.84 s** D) 1.3 s

$t_{t.f} = 2t_{up}$



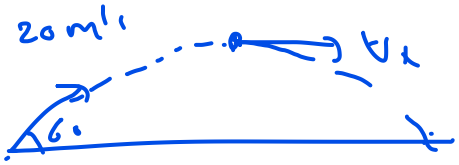
$t_{up} = \frac{V_{iy}}{10} = \frac{V_i \sin\theta}{10} = \frac{12\sin 20}{10} = 0.41$ s

$t_{t.f} = 2 \times 0.41$

$= 0.82$ s

Q:10 A ball is thrown with a velocity of 20 m/s at an angle of 60° above the horizontal. What is the
horizontal component of its instantaneous velocity at the exact top of its trajectory?

A) 10 m/s	B) 17 m/s	C) 20 m/s	D) zero



$v_{ix} = v_i \cos\theta = 20 \cos 60° = 10$

$v_{iy} = v_i \sin\theta = 20 \sin 60$

Q:11 Ignoring air resistance, the horizontal component of a projectile's acceleration
A) is zero.
B) remains a non-zero constant.
C) continuously increases.
D) continuously decreases.

v_x = Constant

$a_x = 0$