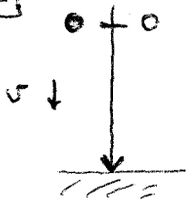
# FÍSICA Y QUÍMICA – MRUA H2

**1**




$v_0 = 0$ m/s (SE DEJA CAER)

$t = 3$ s

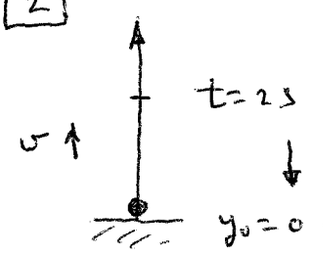
$y = ?$ $v = ?$

a) $v = v_0 + gt = 0 + 9{,}8 \cdot 3 = \boxed{29{,}4 \text{ m/s}}$

b) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 0 + \frac{9{,}8 \cdot 3^2}{2} = \boxed{44{,}1 \text{ m}}$

**2**




ACELERACIÓN NEGATIVA

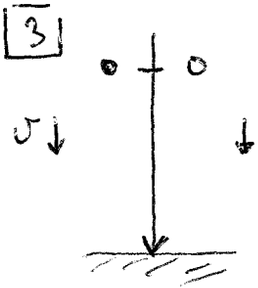
a) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 25 \cdot 2 + \frac{(-9{,}8) \cdot 2^2}{2} = 50 - 19{,}6 = \boxed{30{,}4 \text{ m}}$

b) $v = v_0 + gt$

$v = 25 - 9{,}8 \cdot 2 = 25 - 19{,}6 = \boxed{5{,}4 \text{ m/s}}$

**3**




$v_0 = 0$ m/s

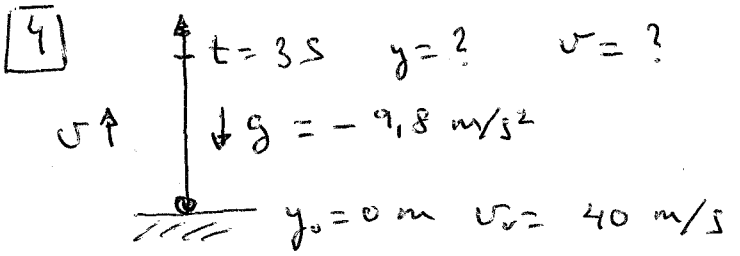
a) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 0 + \frac{9{,}8 \cdot 4^2}{2} = \boxed{78{,}4 \text{ m}}$

b) $v = v_0 + gt$

$v = 0 + 9{,}8 \cdot 4 = \boxed{39{,}2 \text{ m/s}}$

**4**



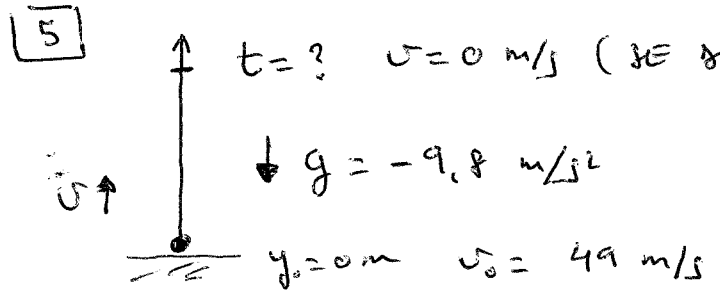

a) $v = v_0 + gt$

$v = 40 - 9{,}8 \cdot 3 = 10{,}6 \text{ m/s}$

b) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 40 \cdot 3 - \frac{9{,}8 \cdot 3^2}{2} = 120 - 44{,}1 = 75{,}9 \text{ m}$

**5**



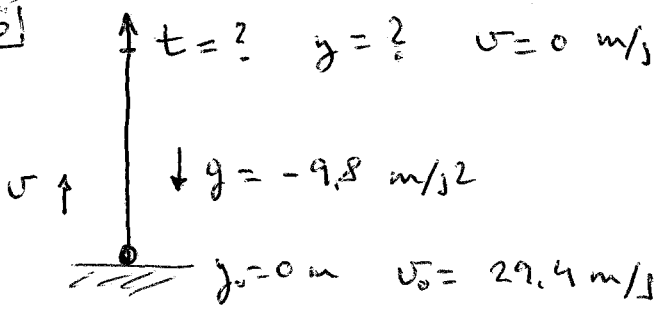

a) $v = v_0 + gt \rightarrow t = \frac{v - v_0}{g} = \frac{0 - 49}{-9{,}8} = 5 \text{ s}$

b) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 49 \cdot 5 - \frac{9{,}8 \cdot 5^2}{2} = 245 - 122{,}5 = 122{,}5 \text{ m}$

c) No puede seguir subiendo, ya que se detiene en ese punto. Como la gravedad le acelera hacia abajo, el objeto comenzará a caer en MRUA.

**6**

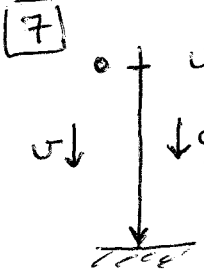


a) $v = v_0 + gt \rightarrow t = \frac{v - v_0}{g} = \frac{0 - 29,4}{-9,8} = \boxed{3\ s}$

b) $y = y_0 + v_0 t + \frac{gt^2}{2}$

$y = 0 + 29,4 \cdot 3 - \frac{9,8 \cdot 3^2}{2} = 88,2 - 44,1 = \boxed{44,1\ m}$

**7**



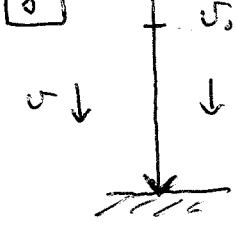

a) $y = y_0 + v_0 t + \frac{gt^2}{2} \Rightarrow y = \frac{gt^2}{2}$ ← ($y_0 = 0$ m, $v_0 = 0$ m/s)

$2y = gt^2 \Rightarrow \frac{2y}{g} = t^2 \Rightarrow t = \sqrt{\frac{2y}{g}}$

$t = \sqrt{\frac{2 \cdot 19,6}{9,8}} = \sqrt{4} = \boxed{2\ s}$

b) $v = v_0 + gt = 0 + 9,8 \cdot 2 = \boxed{19,6\ m/s}$

**8**




a) $t = \sqrt{\frac{2y}{g}}$ (VER PROBLEMA 7)

$t = \sqrt{\frac{2 \cdot 78,4}{9,8}} = \sqrt{16} = \boxed{4\ s}$

b) $v = v_0 + gt = 0 + 9,8 \cdot 4 = \boxed{39,2\ m/s}$