

$$42) A) a = -9.81 \text{ m/s}^2$$

$$v_i = 0 \text{ m/s}$$

$$v_f = ?$$

$$t = 4 \text{ s}$$

$$v_f = v_i + at$$

$$v_f = (-9.81 \text{ m/s}^2)(4 \text{ s})$$

$$v_f = -39.24 \text{ m/s}$$

$$B) d = ? \quad d = v_i t + \frac{1}{2} a t^2$$

$$d = \frac{1}{2} (-9.81 \text{ m/s}^2)(4 \text{ s})^2$$

$$d = -4.905 \text{ m/s}^2 (16 \text{ s}^2)$$

$$d = -78.48 \text{ m}$$

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$$43) A) + 39.24 \text{ m/s}$$

$$B) 78.48 \text{ m}$$

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$$44) d = -3.5 \text{ m}$$

$$v_i = 0 \text{ m/s}$$

$$a = -9.81 \text{ m/s}^2$$

$$v_f = ? \text{ m/s}$$

$$v_f^2 = v_i^2 + 2ad$$

$$v_f^2 = (0 \text{ m/s})^2 + 2(-9.81 \text{ m/s}^2)(-3.5 \text{ m})$$

$$\sqrt{v_f^2} = \sqrt{68.67 \text{ m}^2/\text{s}^2}$$

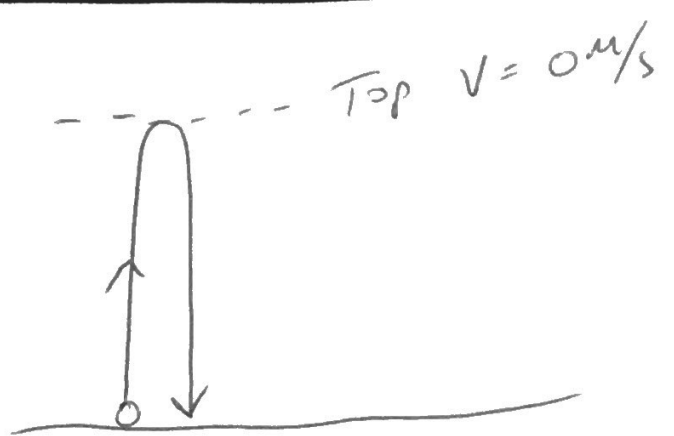
$$v_f = 8.28 \text{ m/s}$$

$$45) A) \quad v_i = 22.5 \text{ m/s}$$

$$d = ? \text{ m}$$

$$a = -9.81 \text{ m/s}^2$$

$$v_f = 0 \text{ m/s}$$



$$v_f^2 = v_i^2 + 2ad$$

$$0 = (22.5 \text{ m/s})^2 + 2(-9.81 \text{ m/s}^2)(d)$$

$$0 = 506.25 \frac{\text{m}^2}{\text{s}^2} + (-19.62 \text{ m/s}^2)(d)$$

$$-506 \quad -506$$

$$\frac{-506.25 \frac{\text{m}^2}{\text{s}^2}}{-19.62 \frac{\text{m}}{\text{s}^2}} = \frac{(-19.62 \text{ m/s}^2)(d)}{-19.62 \text{ m/s}^2}$$

$$25.8 \text{ m} = d$$

$$B) \quad t = ?$$

$$v_f = v_i + at$$

$$0 \text{ m/s} = 22.5 \text{ m/s} + (-9.81 \text{ m/s}^2)(t)$$

$$\frac{-22.5 \text{ m/s}}{-9.81 \text{ m/s}^2} = \frac{-9.81 \text{ m/s}^2 (t)}{-9.81 \text{ m/s}^2}$$

$$2.29 \text{ s} = t_{\text{up}} \times 2 = 4.6 \text{ s}$$

$$46) A) d = 0.25 \text{ m}$$

$$v_i = ? \text{ m/s}$$

$$a = -9.81 \text{ m/s}^2$$

$$v_f = 0 \text{ m/s (AT TOP)}$$

$$v_f^2 = v_i^2 + 2ad$$

$$0 = v_i^2 + 2(-9.81 \text{ m/s}^2)(0.25 \text{ m})$$

$$\sqrt{v_i^2} = \sqrt{4.905 \frac{\text{m}^2}{\text{s}^2}}$$

$$v_i = 2.2 \text{ m/s}$$

$$B) \text{ } t = ? \text{ s}$$

$$v_f = v_i + at$$

~~$$0 = 2.2 + (-9.81)t$$~~

$$0 = 2.2 \text{ m/s} + (-9.81 \text{ m/s}^2)(t)$$

$$\frac{-2.2 \text{ m/s}}{-9.81 \text{ m/s}^2} = \frac{-9.81 \text{ m/s}^2 (t)}{-9.81 \text{ m/s}^2}$$

$$0.224 \text{ s} = t = \text{time up}$$

$$\times 2$$

$$0.45 \text{ s} = t_{\text{total}}$$