Physics 1P — Traeger

Kinematics Problems 60-69

60) $a = 2\frac{m}{s^2}$ $t = 9s$

$x = x_0 + v_0 t + \frac{1}{2} a t^2 = 0 + 0 + \frac{1}{2} \cdot 2\frac{m}{s^2} \cdot 9s^2 =$ **81 m**

61) $v = \frac{d}{t} = \frac{274\,m}{23s} =$ **$11.9\frac{m}{s}$**

62) $x = \frac{1}{2} a t^2 \therefore a = \frac{2x}{t^2} = \frac{2 \cdot 48m}{5.2s^2} =$ **$3.6\frac{m}{s^2}$**

63) $x = \frac{1}{2} a t^2 \therefore t = \sqrt{\frac{2x}{a}} = \sqrt{\frac{2 \cdot 3400m}{34\frac{m}{s^2}}} =$ **14.1s**

64) $x = v_0 t + \frac{1}{2} g t^2 = 120\frac{m}{s} \cdot 4.0s + \frac{1}{2}(-9.8\frac{m}{s^2}) \cdot (4.0s^2)$

$= 480\,m + (-78.4\,m) =$ **401.6m**

65) ~~$x = v_0 t + \frac{1}{2} a t^2$~~ NO Use $D = \bar{v} \cdot t$

$D = 5\frac{m}{s} \cdot 7s =$ **35m**

66) Assume $a = 0$, so $x = x_0 + v_0 t$

$x = 12\,mi + \left(2\frac{mi}{hr} \cdot .5\,hr\right) =$ **22mi**

67) $x = \frac{1}{2} a t^2 \therefore a = \frac{2x}{t^2} = \frac{(2 \cdot 250m)}{17^2 s^2} =$ **$1.73\frac{m}{s^2}$**

68) $x = v_0 t + \frac{1}{2} g t^2 = 40\frac{m}{s} \cdot 2.0s + \left(\frac{1}{2} \cdot (-9.8\frac{m}{s^2}) \cdot (2.0s^2)\right)$

$= 80\,m + (-19.6m) =$ **60.4m**

69) $x = \frac{1}{2} g t^2 \therefore t = \sqrt{\frac{2x}{g}} = \sqrt{\frac{2 \cdot 47m}{-9.8\frac{m}{s^2}}} =$ **2.9s**

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