

$$\begin{aligned} 1) \quad s &= t^2 - 4t + 3 \\ v &= 2t - 4 \\ a &= t \end{aligned}$$

$$\begin{aligned} 3) \quad s &= 3 + 4t - t^2 \\ v &= 4 - 2t \\ a &= -2 \end{aligned}$$

$$\begin{aligned} 5) \quad s &= gt^2 + V_0 t + S_0 \\ v &= 2gt + V_0 \\ a &= 2g \end{aligned}$$

$$\begin{aligned} 7) \quad a(t) &= \frac{3}{t^2} = 3t^{-2} \\ \text{At } t=1, \quad & \\ x(1) &= 6 \quad ; \quad v(1) = 2 \end{aligned}$$

$$\begin{aligned} a) \quad v(t) &= -3t^{-1} + C \\ 2 &= -3 + C \\ 5 &= C \\ v(t) &= -3t^{-1} + 5 \end{aligned}$$

$$\begin{aligned} b) \quad x(t) &= -3\ln t + 5t + C \\ 6 &= -3\ln 1 + 5 + C \\ 6 &= 5 + C \\ 1 &= C \\ x(t) &= -3\ln t + 5t + 1 \end{aligned}$$

$$\begin{aligned} c) \quad x(e) &= -3\ln e + 5e + 1 \\ x(e) &= -3 + 5e + 1 \\ &= 5e - 2 \end{aligned}$$

$$\begin{aligned} 2) \quad s &= 2t^3 - 5t^2 + 4t - 3 \\ v &= 6t^2 - 10t + 4 \\ a &= 12t - 10 \end{aligned}$$

$$\begin{aligned} 4) \quad s &= (2t+3)^2 \\ v &= 2(2t+3) \cdot 2 = 4(2t+3) \\ a &= 8 \end{aligned}$$

$$\begin{aligned} 6) \quad s &= 160t - 16t^2 \quad \checkmark \\ a) \quad v &= 160 - 32t = 0 \quad \begin{array}{c|cc} + & & - \\ \hline 0 & & 5 \end{array} \quad \max \\ t &= 5 \end{aligned}$$

$$\begin{aligned} s(5) &= 160(5) - 16(25) \\ &= 400 \text{ ft} \end{aligned}$$

At  $t=5$ , the object reaches a max height of 400 ft.

$$\begin{aligned} b) \quad 160t - 16t^2 &= 256 \quad \text{Find } t \text{ when } s = 256 \\ 16t^2 - 160t + 256 &= 0 \\ 16(t^2 - 10t + 16) &= 0 \\ (t-8)(t-2) &= 0 \\ t &= 8 \quad t = 2 \\ v(2) &= 96 \text{ ft/sec} \quad \leftarrow \text{traveling up} \\ v(8) &= -96 \text{ ft/sec} \quad \leftarrow \text{traveling down} \end{aligned}$$