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$x = 2.0t^3$

$v = \frac{dx}{dt} = 6.0t^2$

$a = \frac{d^2x}{dt^2} = 12t$

a) $\bar{v} = \frac{\int_1^2 v\,dt}{(2-1)\,\text{sec}} = \frac{\frac{6}{3}t^3\Big|_1^2}{1} = 16-2 = 14\,\frac{m}{s}$

b) $\bar{a} = \frac{\int_1^2 a\,dt}{(2-1)\,s} = \frac{\int_1^2 12t\,dt}{1\,\text{sec}} = \frac{6t^2\Big|_1^2}{1\,\text{sec}} = 24-6 = 18\,m/s^2$

c) $v\Big|_{t=1} = 6t^2\Big|_{t=1} = 6\,\frac{m}{s}$

$v(2s) = 24\,\frac{m}{sec}$

d) $a(1s) = 12\,m/s^2$

$a(2s) = 24\,m/s^2$