Ch 2   Describing Motion in 1D

Q.   Where is an object at time, t,
   which started at x_0 at time, t_0,
   with initial velocity, v_0,
   if it moves with constant acceleration, a?

A. $$x(t) = x_0 + v_0(t-t_0) + \tfrac{1}{2}a(t-t_0)^2.$$

(& This simplifies to $\boxed{x = x_0 + v_0 t + \tfrac{1}{2}at^2 \quad \text{if } t_0 = 0.}$)

Q   What is its velocity at time t?

A. $\boxed{v(t) = v_0 + at}$

(& This is slope of $x(t)$ vs t curve at the time t.)

Q.   What is the acceleration at time t?

A: $\boxed{a = \text{constant}}$ is same for all t.

(& a is the slope of the $v(t)$ vs. t curve
   ... which, being constant, guarantees that
       $v(t)$ vs. t must be a straight line.)

The text should, but does NOT, present
   these 3 equations for   kinematics
under constant acceleration.