

## 8.8: Summary

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Let's summarize the results so far:

### Always True

These equations are definitions, and are always true:

$$v = \frac{dx}{dt} \Rightarrow x(t) = \int v(t) dt \quad (8.8.1)$$

$$a = \frac{dv}{dt} = \frac{d^2x}{dt^2} \Rightarrow v(t) = \int a(t) dt \quad (8.8.2)$$

### Constant Acceleration

These equations are valid only for constant acceleration  $a$  :

$$x(t) = \frac{1}{2}at^2 + v_0t + x_0 \quad (8.8.3)$$

$$v(t) = at + v_0 \quad (8.8.4)$$

$$v^2 = v_0^2 + 2a(x - x_0) \quad (8.8.5)$$

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