8.6: Inverse Relations

Given the definition of (instantaneous) velocity

$$v = \frac{dx}{dt} \tag{8.6.1}$$

we can invert this by multiplying both sides by dt and integrating to get an expression for $x(t)$: it is the integral of velocity v with respect to time t :

$$x(t) = \int v(t)dt. \tag{8.6.2}$$

Similarly, we can invert the definition of acceleration

$$a = \frac{dv}{dt} \tag{8.6.3}$$

to get

$$v(t) = \int a(t)dt \tag{8.6.4}$$