

Figure 2.1 Depiction of position along the x -axis. O defines the origin where positive coordinates are on its right and negative coordinates are on its left.

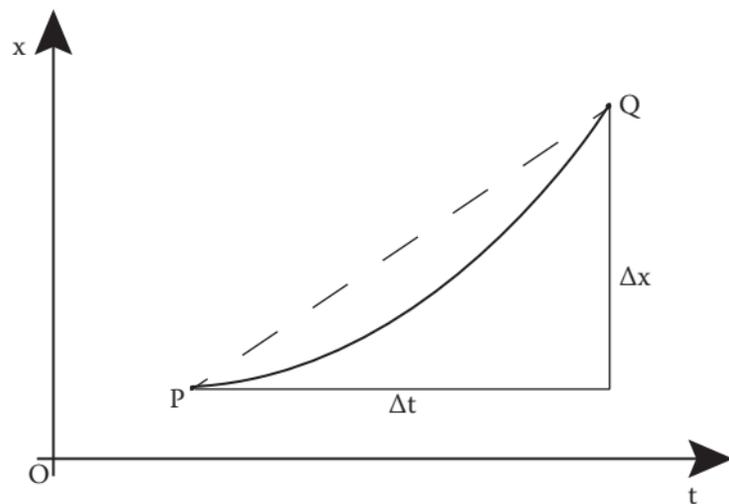


Figure 2.2 An x - t plot for an object between its initial location at P and final destination at Q . Δx is called the “rise” of the line PQ , whereas Δt is its “run.” The average velocity is simply $\bar{v} = \text{rise/run} = \Delta x/\Delta t$.

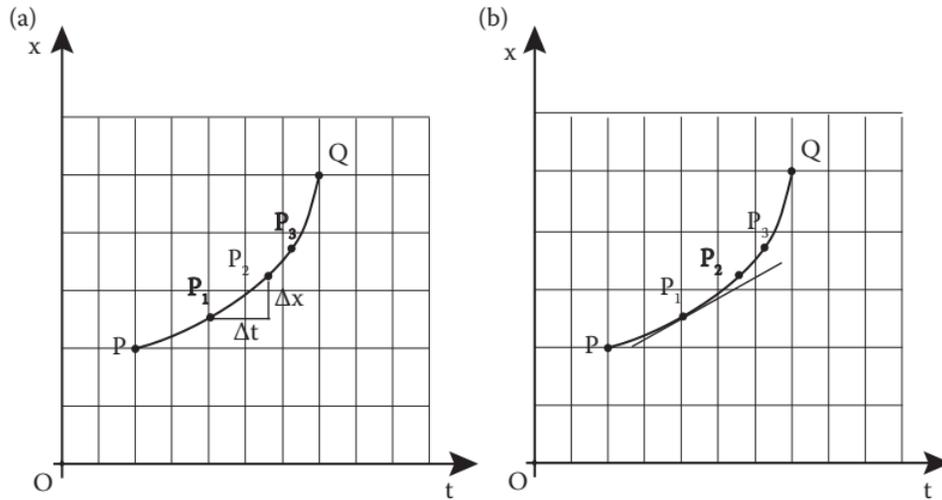


Figure 2.3 (a) An x - t plot that describes an object's motion between two positions P and Q ; P_1 , P_2 , P_3 , and so on are infinitesimally small segments along the object's path; (b) the instantaneous velocity of the object at P_1 is the slope of the line tangent to the plot at P_1 .

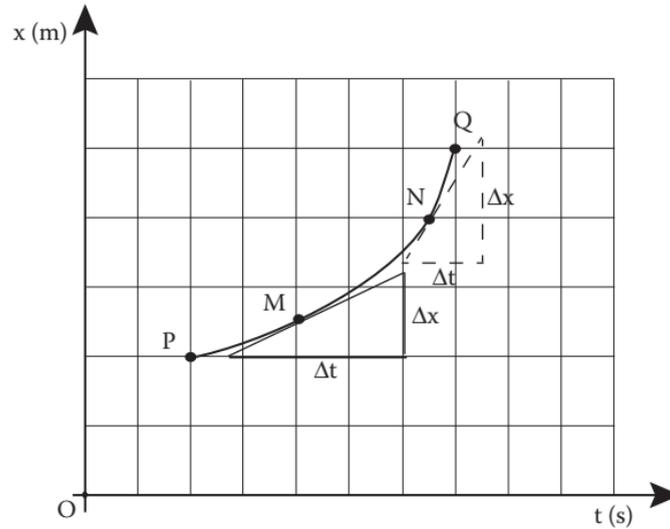


Figure 2.4 The tangent at two points M and N of an object's x - t plot. In each case, a right angle triangle is constructed such that the hypotenuse is tangent to the point at which the slope of the tangent gives the instantaneous velocity of the object.

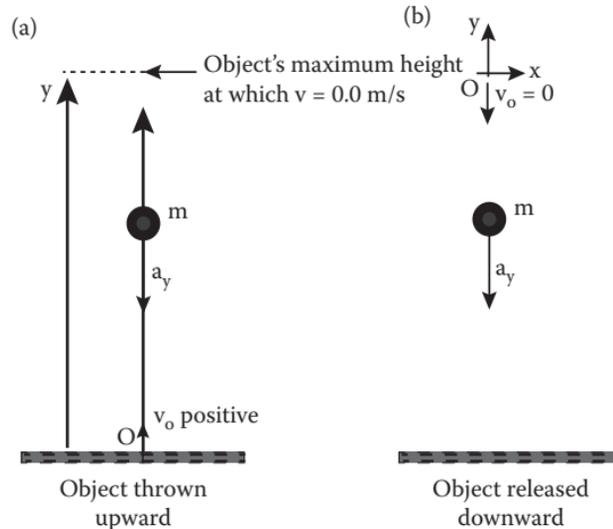


Figure 2.5 Motions of a free-falling object: (a) the object is thrown upward and (b) the object is released downward. In both cases, the y-axis is positively directed upward, whereas the acceleration of the object is 9.80 m/s^2 downward.