Answer on Question #62290-Physics-Atomic and Nuclear Physics

If an object has an initial position (x1, y1) = (5.0 m, 9.0 m), and an initial velocity (v1x, v1y) = (2.0 m/s, -9.0 m/s), what is the final position vector (x2, y2) of the object if its two-dimensional acceleration is described by the graphs in the figure below? (Express your answer in vector form in metres.)

Solution

$$a = (a_x, a_y)$$

$$p_f = p_i + v_i t + a \frac{t^2}{2}$$

$$p_f = (5.0 \text{ m}, 9.0 \text{ m}) + (2.0 \frac{\text{m}}{\text{s}}, -9.0 \frac{\text{m}}{\text{s}})t + (a_x, a_y)\frac{t^2}{2}.$$

If you have the graphs in the figure then you can paste the values a_x , a_y , t in this formula to obtain the answer in only numbers.