



Fig. 9: Method of approximating the area between the curve  $v_y(t)$  and the time- $t$  axis. The area is divided into thin rectangles. The height of each rectangle is made to be  $v_y(t)$  where  $t$  is taken at half the width of each rectangle. The approximation is that the sum of the areas of such adjacent rectangles is approximately the area between the curve and the time- $t$  axis. This method can be used for any shape of a curve. In the unusual case of a linear function like the one above the "approximation" is exact. Also  $v_{y0} = v_{oy}$ .