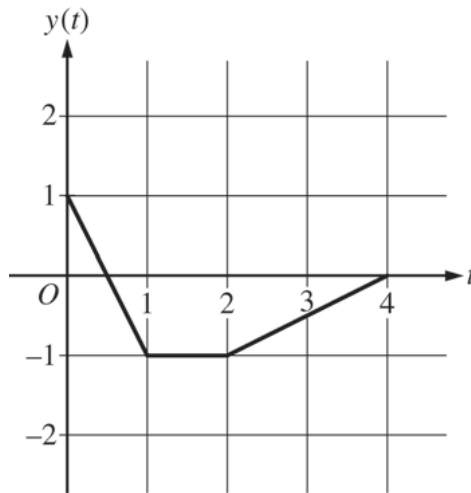




2. At time t , the position of a particle moving in the xy -plane is given by the parametric functions $(x(t), y(t))$, where $\frac{dx}{dt} = t^2 + \sin(3t^2)$. The graph of y , consisting of three line segments, is shown in the figure above. At $t = 0$, the particle is at position $(5, 1)$.
- (a) Find the position of the particle at $t = 3$.
 - (b) Find the slope of the line tangent to the path of the particle at $t = 3$.
 - (c) Find the speed of the particle at $t = 3$.
 - (d) Find the total distance traveled by the particle from $t = 0$ to $t = 2$.
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END OF PART A OF SECTION II