

2. At time $t \geq 0$, a particle moving along a curve in the xy -plane has position $(x(t), y(t))$ with velocity vector $v(t) = (\cos(t^2), e^{0.5t})$. At $t = 1$, the particle is at the point $(3, 5)$.
- (a) Find the x -coordinate of the position of the particle at time $t = 2$.
 - (b) For $0 < t < 1$, there is a point on the curve at which the line tangent to the curve has a slope of 2.
At what time is the object at that point?
 - (c) Find the time at which the speed of the particle is 3.
 - (d) Find the total distance traveled by the particle from time $t = 0$ to time $t = 1$.
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END OF PART A OF SECTION II