9.4 Derivatives of Vector-Valued Functions

Calculus Name: _____ **CA #2**

1. If f is a vector-valued function defined by $f(t) = \langle te^t,\ e^{3t}\rangle$, then $f''(t) =$

2. At time t, $0 \le t \le 2\pi$, the position of a particle moving along a path in the xy-plane is given by the vector-valued function, $f(t) = \langle e^{3t}\sin t\,,\ e^{3t}\cos t\rangle$. Find the slope of the path of the particle at time $t = \frac{\pi}{2}$.

3. The position of a particle moving in the xy-plane is defined by the vector-valued function, $f(t) = \langle t^2 - t - 1, \frac{2}{3}t^3 - \frac{1}{2}t^2 + 4\rangle$. For what value of t is the particle at rest?

4. The vector-valued function f is defined by $f(t) = \langle 2te^t,\ e^t\rangle$. Find $f'(3)$.

5. If h is the vector-valued function defined by $h(t) = \langle 3\cos 2t\,, 8\sin\frac{t}{2}\rangle$, then $h'(t) =$

Answers to 9.4 CA #2

1. $\langle 2e^t + te^t,\ 9e^{3t}\rangle$	2. $-\frac{1}{3}$	3. $t = \frac{1}{2}$	4. $\langle 8e^3, e^3\rangle$	5. $\langle -6\sin 2t, 4\cos\frac{t}{2}\rangle$