Line Integrals- HW Problems

Evaluate the following line integrals.

1. $\int_c (x)ds$, where $\vec{c}(t) =< 2\cos(t), 2\sin(t) >$; $\frac{3\pi}{2} \leq t \leq 2\pi$

2. $\int_c (e^{(x+y)})ds$, where $\vec{c}(t) =< t, 2t - 1, -2t + 2 >$;
$$0 \leq t \leq \ln(2)$$

3. $\int_c (\sin(\sqrt{y}))ds$, where $\vec{c}(t) =< 2, t^2, 1 >$; $0 \leq t \leq \frac{\pi}{2}$.

4. $\int_c (x)ds$, where $\vec{c}(t) =< t, t^2 >$; $\quad 0 \leq t \leq 2$

5. $\int_c (x - z)ds$, where $\vec{c}(t) =< 2\cos(t), 2\sin(t), t >$;
$$0 \leq t \leq \pi$$

6. $\int_c (x^2)ds$, where c is a circle of radius 3 about the origin.

7. $\int_c (2y)ds$, where $\vec{c}(t) = \left(\frac{2}{3}t^{\frac{3}{2}}\right)\vec{i} + (t)\vec{j} + \vec{k}, \quad 0 \leq t \leq 2$

8. $\int_c (x^2)ds$, where $\vec{c}(t) = (t)\vec{i} + (\ln(t))\vec{j} + 3\vec{k}, \quad 1 \leq t \leq 2$

9. $\int_c (y^2)ds$, where c is the graph of $y = e^x$ for $0 \leq x \leq \ln(2)$.