NAME (print): _____

No credit for unsupported answers will be given. No calculators. Clearly indicate your final answer

1. *[3 pts.]* Find the equation of the normal plane for the curve $\vec{r}(t) = <2\sin(3t), t, 2\cos(3t)>$ at the point $(0, \pi, -2)$.

2. *[2 pts.]* Find $\dfrac{\partial^2 f}{\partial x \partial y}$ if $f(x, y) = e^{xy}$.

[more problems on back]

3. *[5 pts.]* Find the curvature of the curve $\vec{r}(t) =< 1+t, 1-t, 3t^2 >$.