MATH 251, Section _____ Quiz 3 (Sections 11.5, 11.6, 11.7 (Arc length)).
Thursday, Sept. 16, 2010 Dr. M. Vorobets

NAME (print): _____

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

1. *[3 pts.]* Consider the quadric surface $y = 4x^2 + z^2$. Find the traces (write **equations** and the **names** of the curves) of this surface in the planes

   (a) $y = 4$:

   (b) $x = 0$:

   (c) $z = 0$:

2. *[2 pts.]* Classify the surface $y = 4x^2 + z^2$ and sketch it.

[more problems on back]

3. *[2 pts.]* Find the limit

$$\lim_{t\to\infty}\left(e^{-t}\,\vec{\imath}+\frac{t-1}{t+1}\,\vec{\jmath}+\tan^{-1}t\,\vec{k}\right)$$

4. *[3 pts.]* Find the length of the curve given by the vector function

$$\vec{r}(t)=\cos^3 t\,\vec{\imath}+\sin^3 t\,\vec{\jmath}+\cos(2t)\,\vec{k},\quad 0\le t\le\frac{\pi}{2}.$$