

NAME: _____

Panther ID: _____

Spring Break Worksheet – due Wednesday, March 19

- MAC 2311, Spring 2014

1. (5 pts) Use a local linear approximation to estimate (without calculator) $7.9^{-1/3}$. Be sure to write the function and the point you'll use for the local linear approximation.

2. (5 pts) (Adapted from a textbook by Tom Apostol) A bug is moving along the parabola $y = x^2$. (This means that the coordinates (x, y) of the bug are both functions of time t , and at every moment they satisfy the relation $y = x^2$.) At what point on the parabola are the x - and y -coordinates changing at the same rate?

3. (5 pts each) Evaluate each of the following limits:

(a) $\lim_{x \rightarrow 0} \left(\frac{1}{x} - \frac{1}{e^x - 1} \right)$

(b) $\lim_{x \rightarrow +\infty} (e^x + x)^{1/x}$