Name: _____

Calculus I Final Exam Review (New Material)

This review sheet is over new material you haven't been quizzed or tested on. Please write legibly and show as much work as possible for each problem.

1. Evaluate each definite or indefinite integral.

   a. $\int \frac{x}{16x^4 - 1}\,dx$

   b. $\int_1^2 \frac{x+1}{x(x^2+1)}\,dx$

   c. $\int \frac{216}{x^4 - 81}\,dx$

2. Find each limit. Use L'hopital's Rule when applicable.

   a. $\lim_{x\to 0} \frac{(\pi/2) - \arccos x}{2\arctan x}$

   b. $\lim_{x\to\infty} \frac{x}{\sqrt{4x^2+25}}$

   c. $\lim_{x\to 0^+} \left(1 + \frac{1}{x}\right)^x$

3. Find the area bounded by the following graphs.

   $f(x) = 3x^3 - x^2 - 10x$ $\qquad$ $g(x) = -x^2 + 2x$

4. Use DeMoivre's Theorem to compute the following.

   a. $(1-i)^4$

   b. $(\sqrt{3}+i)^3$