

Name: KEY

EXAM 2 – Math 105 – Fall 2007

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This exam contains 10 problems, worth a total of 100 points. For the first 6 problems I will give no partial credit, just write your final answer in the corresponding box. For the last 4 problems write out complete solutions and circle or box your answers. The use of books, calculators, cell phones, computers, notes, cheat sheets, and all similar aids is strictly prohibited.

1.  $f(x) = 2x - 1, g(x) = x - x^2, g \circ f(x) =$   $-4x^2 + 6x - 2$

2. Find the inverse of  $f(x) = \frac{3x}{2x - 1}$   $f^{-1}(x) = \frac{x}{2x - 3}$

3. If  $\frac{10}{(e^{-x})^3 - 1} = 2$ , then  $x =$   $-\frac{1}{3} \ln 4$

4.  $\ln \frac{1}{x} + 2 \ln(x) - \ln(x + 1) = 0$  implies  $x =$   $DNE$

5.  $\lim_{n \rightarrow \infty} \left(1 + \frac{2}{n}\right)^{3n} =$   $e^6$

6. An arc of length 3 ft on a circle of radius 3 ft subtends an angle (in radians)  $\theta =$

$1$