Name:_____

Calculus I: Fall 2008 Readiness Test

Directions: Complete as many problems as you can and show all work. Do NOT use a calculator. Your score will NOT count toward your grade in this course.

1. Find the equation of the line through the following points: (2,-5), (5,1)

2. Find the equation of a line parallel to $y = 2x + 5$.

3. Find the equation of a line perpendicular to $y = 2x + 5$.

4. Find the domain of the following functions:

   (a) $f(x) = ln(x - 3)$

   (b) $f(x) = e^{-x}$

   (c) $f(x) = \dfrac{x - 3}{x - 4}$

   (d) $f(x) = tan(x)$.

5. Let $f(x) = ln(x)$ and let $g(x) = x^2 - 1$

   a) What is $f \circ g(x)$?

   b) What is $g \circ f(x)$?

6. Sketch a graph of the function $f(x) = x^3 + 1$.

7. Calculate the following without using a calculator:

   (a) $sin(2\pi) =$

   (b) $cos(\pi) =$

   (c) $cos(3\pi/2) =$

   (d) $sin^2(x) + cos^2(x) =$

8. Given $h(x) = \begin{cases} x^2 & x < 1 \\ 1 - x^2 & x \geq 1 \end{cases}$, determine the following:

   (a) $h(-2) =$

   (b) $h(1) =$

   (c) $h(10) =$

9. Circle True or False.

   (a) TRUE FALSE $ln(a+b) = ln(a) + ln(b)$

   (b) TRUE FALSE $ln(ab) = ln(a) + ln(b)$

   (c) TRUE FALSE $ln(e) = e$

   (d) TRUE FALSE $ln(a/b) = ln(a) - ln(b)$

Solve the following for x:

10. $x - 3x + 32 = 5x - 17$

11. $2x - 5 < 4x + 3$

12. $x^2 + x - 6 = 0$

13. $\dfrac{2x}{x-7} = 9$

14. $e^{2x+1} = 7$

15. $150(2^{x/3}) = 300$

16. $\sqrt{x+13} - 1 = x$