Extra Credit

Name: _____

Math 1100–4

Directions: Show all work for full credit. Clearly indicate all answers. Simplify all mathematical expressions completely. This assignment is due by the end of class on Tuesday, April 24. The points earned on this assignment will be added to your total homework points. Each part of each question is worth 5 points, for a total of 40 possible points.

1. Calculate each of the following integrals:

(a) $\int \ln x \, dx$

(b) $\int x^2 e^{-x} \, dx$

(c) $\int x(3x+4)^8 \, dx$

(d) $\int_1^5 x^4 \ln x \, dx$

2. Evaluate each of the following limits:

(a) $\displaystyle\lim_{x\to 0} \frac{e^x - 1}{x}$

(b) $\displaystyle\lim_{t\to 1} \frac{\ln t}{t^2 - 1}$

3. Calculate the derivative of each of the following functions:

(a) $f(x) = x^{2x}$

(b) $g(t) = (\ln t)^t$