Instructions: You must show all work to receive full credit for the problems below. You may check your work with a calculator, but answers without work will receive minimal credit. Use exact answers unless the problem starts with decimals or you are specifically asked to round.

1. Integrate.

   a. $\int \frac{(\ln x)^5}{x} + \frac{1}{x \ln x} dx$

   b. $\int t^3 e^{-t^4} dt$

   c. $\int 9x e^{-4x} dx$

   d. $\int x^3 \ln 2x \, dx$