

Homework questions for sections 6.5, 7.1-7.4

Math 104, Fall 2007

Credit is given only if supporting work is shown. Only correct answers receive credit. No partial credit is given.

1. Let $f(x) = xe^x$. Find the value of the derivative of the inverse function $f^{-1}(x)$ at $x = e$,

$$(f^{-1})'(e) = ?$$

- A.) $\frac{1}{2}$ B.) 2 C.) $\frac{1}{2}e$ D.) $2e$ E.) $\frac{1}{2}e^{-1}$ F.) $2e^{-1}$

2. Find the value of $f'(1)$ for the function

$$f(x) = (1 + 2x)^x.$$

- A.) $3 + \ln 5$ B.) $1 + 2\ln 5$ C.) $2 + 3\ln 3$ D.) $3 + \ln 3$ E.) $1 + 2\ln 2$ F.) $2 + 3\ln 2$

3. Evaluate the integral

$$\int_1^e \frac{(\ln x)^2}{x} dx.$$

- A.) e B.) $\frac{1}{e}$ C.) $2e$ D.) $\frac{1}{2}$ E.) $3e$ F.) $\frac{1}{3}$