

No books, notes or graphing calculators. SHOW ALL YOUR WORK. ANSWER ALL QUESTIONS.

- (8) 1. - Find the inverse function to $f(x) = \ln(x + 2)$;
- Graph both $f(x)$ and $f^{-1}(x)$;
- What is the domain of $f^{-1}(x)$?
- Where is $f^{-1}(x)$ a continuous function?

- (12) 2. Evaluate the following limits.

(a) $\lim_{x \rightarrow -1} \frac{x^2 + 3x + 2}{x + 1}$

(b) $\lim_{h \rightarrow 0} \frac{(1+h)^3 - 1}{h}$

- (2) 3. **Bonus.** (Credit will be given for complete solutions only.) Evaluate the following limit: $\lim_{x \rightarrow 0^+} \sqrt{x} e^{\sin(\frac{1}{x})}$