

NAME: KEY

YOUR GRADE IS BASED ON THE PROCESS AS WELL AS THE FINAL RESULT. SHOW ALL YOUR STEPS CLEARLY SO YOU WILL BE ELIGIBLE FOR THE MOST PARTIAL CREDIT. YOU MAY USE A CALCULATOR, BUT NO NOTES, BOOKS, OR OTHER STUDENTS. GOOD LUCK!

1.) (5 pts.) Compute $f'(x)$ if $f(x) = \arctan(\ln x)$. You should not simplify your answer.

$$f'(x) = \frac{1}{1 + (\ln x)^2} \cdot \frac{1}{x}$$

2.) (5 pts.) Use the fact that $(\ln(f(x)))' = \frac{f'(x)}{f(x)}$ to find an antiderivative of $f(x) = \frac{2x+3}{x^2+3x+5}$.

$$F(x) = \ln(x^2 + 3x + 5) \quad ("+C" \text{ is not necessary, but is OK})$$

$$\text{Check: } F'(x) = \frac{1}{x^2 + 3x + 5} \cdot (2x + 3) = f(x)$$