Practice Test 3  
Au 04  
Math 152  
Lecturer: Chris Altomare

Name:

You have 30 minutes. SHOW WORK. Answers without work will receive little credit. I STRONGLY recommend taking this test under test conditions.

1. (15 pts) Suppose the velocity \( v(t) = 2te^{-t^2} - 6 \) for some widget moving around. Compute the exact displacement of the particle from \( t = 5 \) to \( t = 7 \).

2. (15 pts) Pick a random word problem from 21-37 in section 5.2 not similar to one we’ve done in class and do it. Hint hint. (I don’t have my book so I can’t suggest one. If I make one up it will be too hard.)

3. (15 pts) Let \( f(x) = \sqrt{e^{2x} - 1} \). Find the inverse \( f^{-1}(x) \). (Don’t worry about any horizontal line test stuff. Just assume \( f^{-1} \) exists and get a formula.)

5. You need not show work on this problem.

1. (5 pts) Let \( (x(t), y(t)) \) parametrize the motion of some particle for \(-3 \leq t \leq 5\). Explain why

\[
\sqrt{(x(1) - x(0))^2 + (y(1) - y(0))^2} \leq \int_0^1 \sqrt{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2} dt
\]

2. (5 pts) Graph \( e^x \).

3. (5 pts) Graph \( \ln x \). Hint: Just use the fact that \( e^x \) and \( \ln x \) are inverse functions.

6. Bonus: Do you like me?