Name: ________________________________  Section: _________________________

Clear your desk of everything except pens, pencils and erasers. **Show all your work.**
If you have a question raise your hand and I will come to you.

1. Evaluate \( \int \frac{dx}{\sqrt{e^{2x} - 2}} \) (total 4 points).
   
   Answer: \( \frac{1}{\sqrt{2}} \text{arcsec} \left( \frac{e^x}{\sqrt{2}} \right) + C \)
   
   (2 points for \( \int \frac{du}{u\sqrt{u^2 - 2}} \); and 2 points for the correct final step.)

2. Evaluate \( \frac{dx}{dx} \sinh(10^x) \) (total 3 points).
   
   Answer: \( \cosh(10^x) \cdot 10^x \ln 5 \)
   
   (2 points for \( \cosh(10^x) \frac{d10^x}{dx} \); 1 point for the correct final result)

3. Evaluate \( \lim_{u \to \infty} \frac{u^n}{e^u} \), where \( n \) is a positive integer (total 3 points).
   
   Answer: 0
   
   (2 points for \( \lim_{u \to \infty} \frac{n!}{e^u} \); 1 points for the correct final result)