

1. (24 pts) Consider the region R in the first quadrant bounded above by $y = \cosh x$, below by $y = 1$, and on the right by $x = \ln 2$.
- (a) Sketch and shade the region R .
- (b) Set up but do not evaluate integrals to determine each of the following:
- I. The volume of the solid generated by rotating R about the y -axis.
 - II. The volume of the solid generated by rotating R about the line $y = 3$.
 - III. The length of the curve $y = \cosh x$ for $0 \leq x \leq \ln 2$. (Simplify the integrand, eliminating all square roots.)
2. (14 pts) Find the surface area when 1. (24the