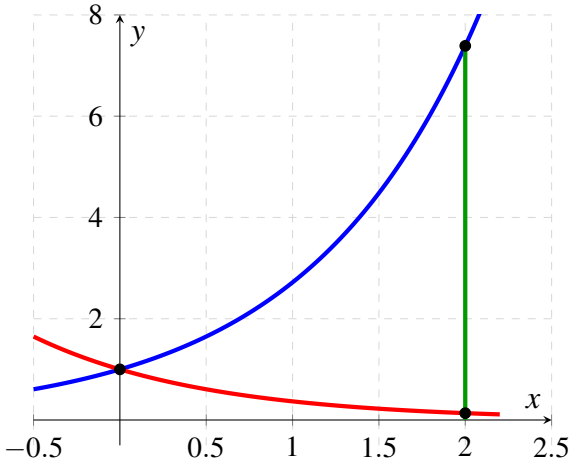
Math 252: Quiz 2 (corrected) **4 Sept 2025**

Name: _____ **/ 25**

30 minutes maximum. No aids (book, calculator, etc.) are permitted. Show all work and use proper notation for full credit. Answers should be in reasonably-simplified form. 25 points possible.

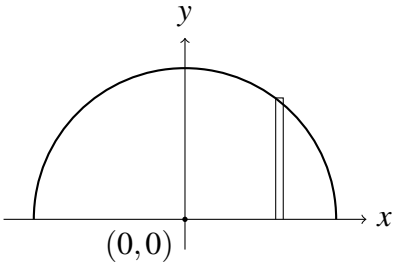
1. (9 points) The region R, bounded by $y = e^x$, $y = e^{-x}$ and $x = 2$ is sketched below.



   (a) Label each of the three graphs with the appropriate equation.

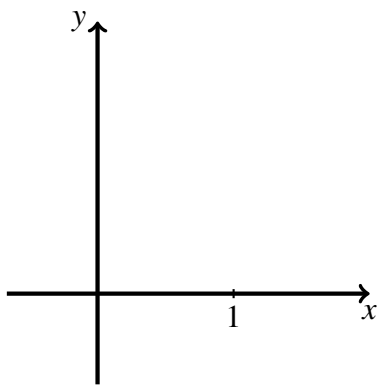
   (b) Set up and evaluate an integral to calculate the area of region R. Your answer should be in reasonable simplified form.

2. (5 points) Suppose a solid has a base that is the top-half of a circle of radius a and slices perpendicular to the base are squares. The base and a sample rectangle are below. Set up an integral to find its **volume**. You do not need to evaluate the integral.



3. (11 points) Let R be the region bounded by $y = 2x^2$, $y = 0$, and $x = 1$.

   (a) Sketch the region R, label the graphs with their equations, and label the points of intersection with their coordinates.



   (b) Use disks to find the volume of the solid obtained by rotating R about the x-axis.

   (c) Use washers to find the volume of the solid obtained by rotating R about the y-axis.