1. Consider the region bounded by \( y = \sqrt{x}, y = (3 - x)/2, \) and the \( x \)-axis. Carefully sketch the region.

(a) \( 3 \) The region is rotated about \( y = 2 \). Express the volume as an integral using the Shell method.

(b) \( 3 \) The region is rotated about \( y = 2 \). Express the volume as the sum of two integrals using the Disk method.

(c) \( 6 \) The region is rotated about \( x = 4 \). Find the volume.

2. The region in the first quadrant bounded by the graphs of \( y = e^x \) and \( x = 1 \), the shaded region in the figure, is revolved around the line \( x = 2 \).

3. \( 3 \) Express the volume as an integral using the Shell method.

4. \( 3 \) Express the volume as the sum of two integrals using the Disk method.
5. Consider the region bounded by $y = \tan x$ and $y = \sec x$ for $x \in [0, \pi/4]$. Carefully sketch the region. The region is rotated about the line $y = 2$.
You will find the following identities useful.

\[
\tan^2 x + 1 = \sec^2 x \quad \quad \int \sec u \, du = \ln |\sec u + \tan u| + c
\]

(a) 3 Express the volume of the solid using the Disk method.

(b) 3 Express the volume of the solid using the Shell method.

(c) 6 Find the volume.