1. Evaluate the integral:

\[
\int_{-1/2}^{1/2} \frac{1}{\sqrt{1 - x^2}} \, dx = \left[ \arcsin x \right]_{-1/2}^{1/2} = \arcsin(\frac{1}{2}) - \arcsin(-\frac{1}{2})
\]

\[
= \frac{\pi}{3} - (-\frac{\pi}{6}) = \frac{\pi}{3} + \frac{\pi}{6} = \frac{\pi}{2}
\]

2. The shaded region in the diagram lies between the graph of \( \frac{1}{\sqrt{x}} \), the x-axis, and the lines \( x = 1 \) and \( x = 2 \). Find the volume of the solid obtained by revolving the region around the x-axis.

\[
V = \pi \int_{1}^{2} y^2 \, dx
\]

\[
= \pi \int_{1}^{2} \left( \frac{1}{\sqrt{x}} \right)^2 \, dx = \pi \left[ \ln x \right]_{1}^{2} = \pi (\ln 2 - \ln 1)
\]

\[
= \pi \ln 2
\]