The diagram shows part of the curve with equation $y = \dfrac{1}{(5x-4)^{\frac{1}{3}}}$ and the lines $x = 2.4$ and $y = 1$. The curve intersects the line $y = 1$ at the point $(1,1)$.

Find the exact volume of the solid generated when the shaded region is rotated through $360°$ about the x-axis. [6]

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