4C Revolutions with Parametrics

1. The curve C shown has parametric equations:

$$x = t(1+t), \quad y = \frac{1}{1+t}, \quad t \geq 0$$

The region R is bounded by the curve, the x-axis and the lines $x = 0$ and $x = 2$.

Find the exact volume of the solid formed when R is rotated 2π radians about the x-axis.