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$$\Rightarrow 2 \left\{ 1 - \frac{1}{1+y} \right\} dy = - \left\{ 1 - \frac{1}{1+x} \right\} dx$$

$$\text{Integrate: } 2 \{ y - \ln|1+y| \} = - \{ x - \ln|1+x| \} + C$$

$$y(0) = 1 \Rightarrow 2 \{ 1 - \ln 2 \} = - \{ 0 - \ln 1 \} + C$$

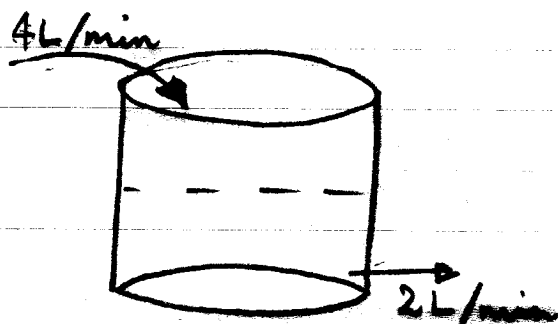
$$\Rightarrow C = 2 - 2 \ln 2$$

$$\therefore 2 \{ y - \ln|1+y| \} = \ln|1+x| - x + 2 - 2 \ln 2$$

Solve the I.V.P. implicitly.

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2.



$$V(0) = 100L$$

$$A(0) = 20Kg$$

Let $A(t)$ be the amount of salt in the tank

Rate of salt in is $4 \cdot 2 = 8Kg/min$

Rate of salt out is $2 \frac{A(t)}{V(t)}$, where $V(t)$ and

$A(t)$ are the volume of water and amount of salt in the tank, at time t , respectively.