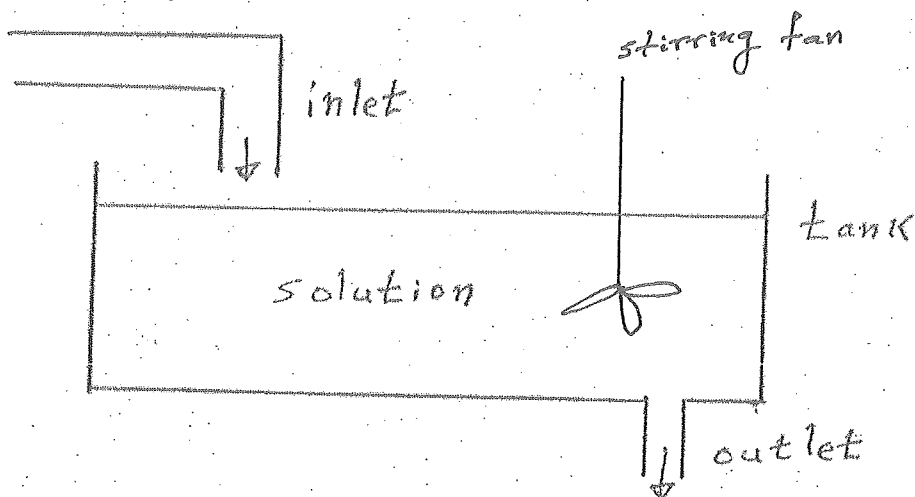


Diagram for the Tank Reactor



Definitions:

- q = rate of inlet flow
- w = concentration of inlet solution
- V = volume of solution in the tank
- $f.t$ = concentration of solution in the tank at time t

Axioms:

- q is a constant
- w is a constant
- rate of outlet flow = rate of inlet flow
- mixing of input in the tank is instantaneous and complete
- flow (both input and output) begins at time $t=0$ (thus, $f.0$ is the "initial concentration" of the solution in the tank)

Theorems:

1. V is constant.
2. $f.\infty = w$

Task:

find the formula for $f.t$
