Background information:

For a fund incremented with new principle deposits, decremented with principal withdrawls, and incremented with interest earnings many times throughout a period the following formula is used:

$$B = A + C + I$$

$A =$ amount in the fund at the beginning of the period
$B =$ the amount in the fund at the beginning of the period
$C_t =$ the net amount of of principal contributed at time t where $0 \leq t \leq 1$
$C =$ the total amount of principle contributed during the period.

It is assumed that all interest earned I is received at the end of the period and the exact equation of value $I = iA + \sum C_t \times ({}_{1-t}i_t)$. Assuming compound interest:

$${}_{1-t}i_t = (1+i)^{1-t} - 1$$

A fund earning $.04\%$ has a balance of 1000 at the beginning of the year. If 200 is added to the fund at the end of three months and if 300 is withdrawn from the fund at the end of nine months, find the ending balance using the simple interest approximation.

Since 200 was deposited at 3 months $t = \frac{3}{12} = .25$
Since 300 was withdrawn at 9 months $t = \frac{9}{12} = .75$
So $I = .04 \times 1000 + [(200(1.04)^{1-.25} - 300(1.04^{1-.75})]$
$= 40 + [200(.0298524452) - 300(.0098534065)$
$= 40 + [5.97048904 - 2.956021965] = 40 + 3.3014467069 = 43.014467069$

$A = 1000$
$C = 200 - 300 = -100$
$B = 1000 - 100 + 43.0144676069 = 943.014467069$
Does my work look correct the exact answer in the back of the book is 943. I am wondering I did it right because ${}_{1-t}i_t = (1+i)^{1-t} - 1$ was said to be used assuming compound interest but the question asks for simple interest approximation and the formulas that I used are the only ones given. The only other thing that I am given is this:

$$i = \frac{I}{A + \sum C_t(1-t)}$$

Which is described as the amount of interest earned on the fund divided by the average amount of principle.