Assignment I - ICSE 10 2018 - Q9(a)

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The various parameters given are listed in the following table:

Symbol	Description	Value
I	Interest	₹5550
P	Monthly Deposit	₹1000
r	Annual Interest Percentage	10%
n	Number of Months	?

We know the formula for interest on a recurring deposit is:

$$I = \frac{Prn(n+1)}{12 \cdot 2 \cdot 100} \tag{1}$$

$$\implies 5550 = \frac{1000 \cdot 10n(n+1)}{12 \cdot 2 \cdot 100} \tag{2}$$

$$\implies n(n+1) = 1332 \tag{3}$$

$$= 36 \cdot 37 \tag{4}$$

Solving the quadratic, we get $n = 36$ or $n = -37$. Discarding the negative solution, we get that the time of maturity is 36 months, or 3 years.

We can verify this answer by graphing the interest as a function of time, i.e.,

$$y = \frac{1000 \cdot 10x(x+1)}{12 \cdot 2 \cdot 100} \tag{5}$$

along with the interest at time of maturity $y = 5550$, and checking for the point of intersection, where y is the interest in rupees, and x is time in months.