Assignment 1

AI1110: Probability and Random Variables

Indian Institute of Technology Hyderabad

Aayush Prabhu
AI21BTECH11002

2 April 2022

ICSE 2014 Grade 10

Question 2(b)

Question: Shahrukh opened a Recurring Deposit Account in a bank and deposited ₹800 per month for 1.5 years. If he received ₹$15,084$ at the time of maturity, find the rate of interest per annum.

Solution: Let us first bring up the general case.

Let,

a) Deposit per month be 'd'.

b) Time(in months) be 't'.

c) Total received amount be 'r'.

d) Total interest be 'i'.

e) Rate of interest 'I'.

Total Interest would be the Total amount received minus the Total amount deposited, also Rate of Interest per annum would be Total Interest divided by time in years.

$$\therefore i = r - dt \text{ and } I = \frac{12i}{t}$$

Now the values given in the question are:

$d =$ ₹800, $t = 18$(as 1.5 years is equal to 1.5×12 months, i.e 18 months), $r =$ ₹$15,084$.

Arranging all these values in a table

Parameter	Symbol	Value
Deposit per month	d	₹800
Time(in months)	t	18
Total received amount	r	₹$15,084$
Total Interest	i, where $i = r - dt$	To be Calculated
Rate of Interest	I, where $I = \frac{12i}{t}$	To be Calculated

$\therefore i =$ ₹$15,084$ $-$₹(800×18)

$\Rightarrow i =$ ₹$15,084$ $-$₹$14,400$

$\Rightarrow i =$ ₹684

Now $I = \frac{12i}{t} \Rightarrow I = \frac{12 \times 684}{18}$

$\therefore I =$ ₹456

$\therefore$ Rate of interest per annum is ₹456.