

Time Value of Money

Authors Name

Institutional Affiliation

Time Value of Money

Lisa makes an annuity contribution of USD 2000 for 13 years. Thereon this amount will be compounded for 32 years for the period which she is not contributing at an effective rate of 7 percent.

Calculating the annuity

Future value of the annuity = contribution amount * $[(1 + \text{interest rate})^n - 1] / \text{interest rate}$

Where; contribution amount is 2,000, interest rate is seven percent and a term of 13 years.

$$FV = 2000 [(1.07)^{13} - 1] / 0.07$$

$$FV = 40,281.29$$

The future value of the annuity is calculated to the age of 33 years when she stopped making contributions. This amount is then compounded to the age of 65 years.

Compound interest = amount $(1 + \text{interest})^n$

Where; amount is 40,281.29, interest rate of 7 percent, and a term of 32 years.

The value of the contribution at the age of 65 years = $40,281.29 (1 + 0.07)^{32}$

The value of Lisa's contribution is 351,062.3

Bob makes an annuity contribution of USD 2000 for 33 years from the age of 32 years to his retirement age of 65 years.

Future value of the annuity = contribution amount * $[(1 + \text{interest rate})^n - 1] / \text{interest rate}$

$$FV = 2000 [(1.07)^{33} - 1] / 0.07$$

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$$FV = 237,866.9$$

From the calculations made above, Lisa has contributed for only 13 years. However, the contribution made earns a compounded interest for 32 years until she attains the retirement age of 65 years. Bob has contributed to the scheme for 33 years 20 more terms than Jane. At the age of 65 years Janes contribution amounts to three hundred and fifty one dollars while Bob's contribution is two hundred and thirty seven thousand dollars which is one hundred and thirteen thousand dollars less of Lisa.