

TOPIC

Economics – Section VI – Question 10

QUESTION

I invested \$20,000 in the Guardian Angel mutual fund. At the end of three years, I got a return of \$18,000, and at the end of six years, I got a return of \$12,000. The rate of return I receive on the investment most nearly is

- (A) 7.5%
- (B) 8.5%
- (C) 9.5%
- (D) 10.5%

HINT

The rate of return is defined as the interest rate where PW of cost = PW of benefits

SOLUTION

The rate of return is defined as the interest rate where PW of cost = PW of benefits

$$20000 = 18000 (P/F, i, 3) + 12000 (P/F, i, 6)$$

$$\text{Try } i = 12\%$$

$$\text{RHS} = 18000 (0.7118) + 12000 (0.5066) = 12812.40 + 6079.20 = 18891.60$$

$$\text{Try } i = 8\%$$

$$\text{RHS} = 18000 (0.7938) + 12000 (0.6302) = 14288.40 + 7562.40 = 21850.80$$

Use linear interpolation between 8% and 12%, rate of return

$$\begin{aligned} i &= 8\% + 4\% \left(\frac{21850.80 - 20000}{21850.80 - 18891.60} \right) \\ &= 8\% + 4\% \left(\frac{1850.80}{2959.20} \right) \\ &= 10.5\% \end{aligned}$$

ANSWER

(D)

CONTRIBUTOR

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