

Answer on Question #51496, Economics, Finance

You discover an antique in your attic that you purchased at an estate sale 10 years ago for RM400. You auction it on eBay and receive RM 8,000 for your item. What annual rate of return did you earn?

Solution:

We start to solve with the given data according to the task. We have the Present value = 400, Number of Years = 10 years, Future value = 8000. Thus, we can apply the formula for determination of the Future value in order to find the annual rate of return:

$$\text{Future Value} = \text{Present Value} \times [(1 + \text{Interest Rate})^{\text{Number of Years}}]$$

We substitute the given values into the formula.

$$8,000 = 400 \cdot [(1 + i)^{10}]$$

Then we divide both sides of the equation by 400 and obtain the following result.

$$(1 + i)^{10} = 20$$

Solve the result equation by using the logarithm.

$$\log_{10}(20) = (1 + i)$$

Thus, we can determine the value of Interest Rate.

$$(1 + i) = 2^{\frac{1}{5}} \cdot 10^{\frac{1}{10}}$$

Simplify the equation.

$$i = (1.148698 \cdot 1.1746189) - 1 = 1.349283 - 1 = 0.349283$$

Finally, we got the following annual rate of return, which is equal to 34.93%.

Answer: Annual rate of return is equal to 34.93%.