Answer on Question #38549 – Economics – Economics of Enterprise

A couple borrows $10,000 to buy a car. The loan agreement specifies that monthly payments are to be made for four years. The annul interest rate is 12 percent. Determine the monthly payment.

Solution

The periodic loan payment amount is determined with this formula:

$$R = \frac{Pi}{1-(1+i)^{-n}},$$

where R is the regular payment you will be making, P is amount borrowed, i is the periodic interest rate (the annual rate divided by the number of times each year you are making payments), i=r/1200 (if monthly) and n is the number of payments (if monthly, n=N*12=4*12=48), r is the rate of interest (compounded).

The interest rate per month is $i = 12\% \div 12 = 1\%$, or 12/1200=0.01 per interest period.

The number n of payments is 4 years$\times 12 = 48$.

Using all the values in the formula, we get:

$$R = \frac{Pi}{1-(1+i)^{-n}} = \frac{10000 \times 0.01}{1-(1+0.01)^{-48}} \approx \$263.34.$$

Answer: $263.34