

Answer on Question #83989 – Math – Financial Math

Question

Anna's bank gives her a loan with a stated interest rate of 10.22%. How much greater will Anna's effective interest rate be if the interest is compounded daily, rather than compounded monthly?

Solution

Original Annual Percentage Rate (APR) = 10.22% compounded monthly.

Original effective interest rate (EIR), compounded monthly

$$\text{EIR}_{\text{monthly}} = (1 + (0.1022/12))^{12}$$

$$\text{EIR}_{\text{monthly}} = 1.10712576$$

Original effective interest rate (EIR), compounded daily

$$\text{EIR}_{\text{daily}} = (1 + (0.1022/365))^{365}$$

$$\text{EIR}_{\text{daily}} = 1.107589126$$

The difference in the rate due to the different period is:

$$\text{EIR}_{\text{daily}} - \text{EIR}_{\text{monthly}} = 1.107589126 - 1.10712576 = 0.00046336$$

Transform and get:

$$= 0.04634\%$$

Answer: 0.04634%.