Answer on Question #80644 – Math – Financial Math

Question

You invest R 20 000.00 at an interest rate of 10% per annum. After how many years will your investment grow to a value of R 28 000.00 if the interest earned is:

Simple interest
Compound interest

Solution

Simple interest:
Interest per year: 20000*10/100 = 2000 R
t=(28000-20000)/2000 = 4 years

Compound interest:

$$FV = PV\left(1+\frac{r}{m}\right)^{tm}$$

FV – future value to be paid after t years
PV – present value
r – annual rate per year, expressed in decimal
m - number of compounding periods per year
t – time in years
FV= 28000
PV = 20000
r=10/100 = 0.1
m = 1

$$28000 = 20000\left(1+\frac{0.1}{1}\right)^{1*t}$$

28000/20000 = $(1+0.1)^t$
1.4 = 1.1^t
t = $\log_{1.1} 1.4$ = 3.53 years

Answer: my investment will grow to a value of R 28 000.00 in

- simple interest – 4 years;
- compound interest – 3.53 years.