

Answer to Question #90633 – Math – Financial Math

Question

- 1) At what compound interest rate per annum must money be invested if the accrued amount must treble in ten years and interest is calculated monthly?
- 2) At what period of time will R2500 double if the interest is calculated half yearly as 11% per annum?

Solution

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

$$1) \quad 3P = P \left(1 + \frac{r}{12}\right)^{12 \cdot 10}$$

$$3 = \left(1 + \frac{r}{12}\right)^{120}$$

$$\ln 3 / 120 = \ln \left(1 + \frac{r}{12}\right)$$

$$1 + \frac{r}{12} = 1.009197$$

$$r/12 = 0.009197$$

$$r = 0.1104$$

$$r = 11.04\%$$

$$2) \quad 5000 = 2500 \left(1 + \frac{0.11}{2}\right)^{2t}$$

$$\ln 2 = 2t \ln(1.055)$$

$$2t = \ln 2 / \ln(1.055)$$

$$t = 6.4731 \text{ yrs.}$$

Answer: 1) $r = 11.04\%$; 2) $t = 6.4731$ yrs.