



CONGRATULATIONS to all our winners

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FINANCIAL MATHS Solutions to last week's questions

Question 1

D) R703 733,40

$$A = P(1+i)^n \quad \therefore \quad A = 475000(1+0,14)^3 = R703\,733,40$$

Question 2

B) 20%

$$A = P(1-i)^n \quad \therefore \quad 243200 = 475000(1-i)^3$$

$$\frac{243200}{475000} = (1-i)^3$$

$$\sqrt[3]{\frac{243200}{475000}} - 1 = -i \quad \therefore \quad i = 0,2 = 20\%$$

Question 3

D) R15 585,44

$$F = x \left[\frac{(1+i)^n - 1}{i} \right] \quad \therefore \quad 671372 = x \left[\frac{\left(1 + \frac{0,12}{12}\right)^{36} - 1}{\frac{0,12}{12}} \right]$$

$$671372 = x[43,0768\dots]$$

$$\therefore x = R15\,585,44$$

Question 4

E) R12 632,19

$$P = x \left[\frac{1 - (1+i)^{-n}}{i} \right] \quad \therefore \quad 1200000 = x \left[\frac{1 - \left(1 + \frac{0,113}{12}\right)^{-240}}{\frac{0,113}{12}} \right]$$

$$1200000 = x[94,9954\dots]$$

$$\therefore x = R12\,632,19$$

Question 5

A) 11,9%

Question 6

B) 65

$$P = x \left[\frac{1 - (1+i)^{-n}}{i} \right] \quad \therefore \quad 1200000 = 25000 \left[\frac{1 - \left(1 + \frac{0,113}{12}\right)^{-n}}{\frac{0,113}{12}} \right]$$

$$\therefore \quad \frac{1200000}{25000} \times \frac{0,113}{12} = 1 - \left(1 + \frac{0,113}{12}\right)^{-n}$$

$$\therefore \quad \frac{113}{250} - 1 = -\left(1 + \frac{0,113}{12}\right)^{-n}$$

$$\therefore \quad \frac{137}{250} = \left(1 + \frac{0,113}{12}\right)^{-n}$$

$$\therefore \quad n = -\log_{\left(1 + \frac{0,113}{12}\right)} \frac{137}{250} = 64,1742\dots \text{ i.e. 65 instalments}$$