Worked Example 9

A loan attracts an interest rate of 23% compounded daily. Find:

(a) the nominal rate, \( R \), and the number of compounding periods, \( n \)
(b) the effective rate, \( R_{ef} \), using the values found in (a).

Working

(a) \( R = 23\% \)
\( n = 365 \)

\[ R_{ef} = \left(1 + \frac{R}{n}\right)^n - 1 \times 100 \]

(b) \( R = 0.23 \)

\[ R_{ef} = \left(1 + \frac{0.23}{365}\right)^{365} - 1 \times 100 \]
\[ R_{ef} = 0.2585 \times 100 \]
\[ R_{ef} = 25.85\% \text{ p.a.} \]

1.4 Comparing interest rates

Fluency

1. For each of the following find the effective rate of interest (\( R_{ef} \)).

(a) $40 000 invested at a simple interest rate of 7% p.a.
(b) $10 000 invested at an annual compounding rate of 9.4% p.a.
(c) $100 000 invested at a monthly compounding rate of 12.75% p.a.
(d) $35 000 borrowed at a weekly compounding rate of 19.7% p.a.
(e) $20 000 borrowed at a fortnightly compounding rate of 16.5% p.a.
(f) $200 000 invested at a rate of 6\( \frac{1}{4} \) % p.a. compounded every 5 days.