

11u (8.4) p. 512 #10

① $FV = 25000$

$R = 150$

$n = 10 \times 12 = 120$

$i = \frac{r}{12}$ $r = \text{annual rate}$

② Sub values into $FV = R \left[\frac{(1+i)^n - 1}{i} \right]$

and solve for i .

$25000 = 150 \left[\frac{(1+i)^{120} - 1}{i} \right]$

divide both sides by 150

$LS = \frac{25000}{150} = 166.\bar{6}$

$RS = \frac{(1+i)^{120} - 1}{i}$

③

let $i = 2\% = 0.02$

$RS = \frac{(1.02)^{120} - 1}{0.02}$

$RS = 488.3$

use trial & error for values of i that will make $RS = LS$

$\therefore i \neq 0.02$

let $i = 0.5\% = 0.005$

$RS = 163.9$

$\therefore i \neq 0.005$

let $i = 0.6\% = 0.006$

$RS = 175.0$

$\therefore i \neq 0.006$

let $i = 0.55\% = 0.0055$

$RS = 169.3$

$\therefore i \neq 0.0055$

let $i = 0.525\% = 0.00525$ $RS = 166.575 = LS$

④ Solve for "r" $i = \frac{r}{12}$

$0.00525 = \frac{r}{12}$

Conclusion

$(0.00525)(12) = r = 0.063$

$r = 0.063 \times 100 = 6.3\%$

\therefore Jamal needs to invest at 6.3% annual interest rate.