

- c. If a man has a choice of investing a sum of money at 9% compounded annually or 8.8% compounded semiannually, which one he has to choose? Why? (3 points)

I. For annual rate

$$r_e = (1+r)^t - 1 = (1+0.09)^1 - 1 = 0.09 = 9\% \quad \} \textcircled{1}$$

II. For Semiannual interest ; $n=2$

$$\begin{aligned} r_e &= \left(1 + \frac{0.088}{2}\right)^2 - 1 \\ &= 0.089936 = 8.994\% \quad \} \textcircled{1} \end{aligned}$$

So, the man must choose to invest his money annually at 9%. } \textcircled{1}

- d. If \$7500 is invested for four years with an interest rate of $5\frac{1}{2}\%$ compounded continuously, then find the compounded amount and compounded interest. (2 points)

Solution: $P = \$7,500$, $r = 0.055$, $n = 4 = t$

$$\begin{aligned} \text{The compounded amount} &= S = P e^{rt} \\ &= 7,500 e^{(0.055)(4)} \\ &= \$9,345.58 \quad \} \textcircled{1} \end{aligned}$$

$$\begin{aligned} \text{The compounded interest} &= S - P \\ &= 9,345.58 - 7,500 \\ &= \$1,845.58 \quad \} \textcircled{1} \end{aligned}$$