

Some useful formulas:

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

$$A = P(1 + rt)$$

$$A = P \left[ \frac{(1+i)^m - 1}{i} \right]$$

$$V = P \left[ \frac{1 - (1+i)^{-m} - 1}{i} \right]$$

- (1) [5] What rate of interest compounded annually is required to double an investment in 3 years?

We require

$$P(1+r)^3 = 2P$$

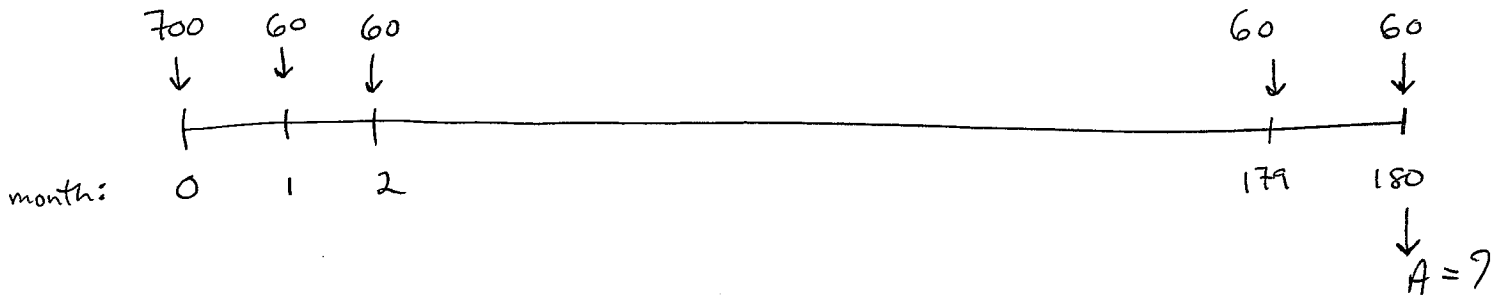
$$\therefore 1+r = 2^{\frac{1}{3}}$$

$$r = 2^{\frac{1}{3}} - 1$$

$$\approx 0.2599$$

$$= 25.99\%$$

(2) [10] Pam and Tim decide to start saving money for their daughter's college education. They open a college savings plan with a \$700 initial investment and next month start to make monthly deposits of \$60. If the account pays 5.00% compounded monthly, how much will the account be worth after 180 deposits? Be sure to include the initial investment in the computation.



$$\therefore A = 700 \left(1 + \frac{0.05}{12}\right)^{180} + 60 \left[ \frac{\left(1 + \frac{0.05}{12}\right)^{180} - 1}{\left(\frac{0.05}{12}\right)} \right]$$

$$\approx \$ 17,516.93$$

$\therefore$  After 180 deposits of \$60 the account will be worth \$17,516.93.