Some useful formulas:

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

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

(1) [5] What is the accumulated value of \$500 invested at 8% compounded quarterly for $2\frac{1}{2}$ years?

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

$$= 500\left(1+\frac{0.08}{4}\right)^{(4)(2.5)}$$

$$= \boxed{\$609.50}$$

(2) [5] What rate of interest compounded annually is required to double an investment in 3 years?

Solve $P\left(1+\frac{r}{1}\right)^{(3)(1)} = 2P$ for r

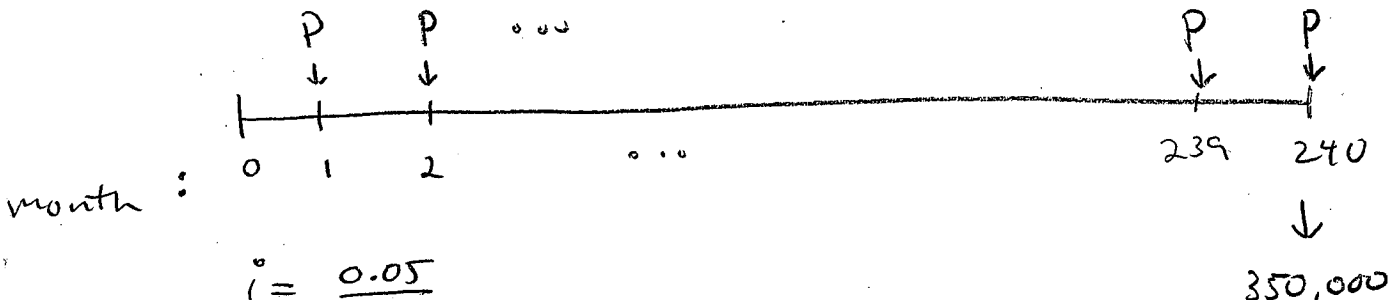
$$(1+r)^3 = 2$$

$$1+r = 2^{1/3}$$

$$r = 2^{1/3} - 1$$

$$r \doteq 0.26 = \boxed{26\%}$$

(3) [5] A person wishes to accumulate \$350,000 in a pension fund over the next 20 years. In order to reach this goal, how much should the person deposit at the end of each month into an account paying 5% compounded monthly?



$i = \frac{0.05}{12}$

$m = (12)(20) = 240$

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

$$\therefore P = \frac{A\,i}{(1+i)^m - 1}$$

$$= \frac{(350\,000)\left(\frac{0.05}{12}\right)}{\left(1+\frac{0.05}{12}\right)^{240} - 1}$$

$$= \boxed{\$\ 851.51}$$