

$$S = pe^{rt}$$

$$40300 = 5500 e^{.048t}$$

$$\rightarrow \frac{40300}{5500} = \frac{5500}{5500} e^{.048t}$$

$$7.327 = e^{.048t}$$

$$\ln 7.327 = \ln e^{.048t}$$

$$\ln 7.327 = .048t (\ln e) \rightarrow 1$$

$$\therefore t = \frac{\ln 7.327}{.048} = 41.49 \text{ years}$$

II] What annual rate of interest you seek if you want to double your investment in 6 years, if the amount is:-

a) Compounded continuously.

present value = p
 (to double it) $S = 2p$
 $t = 6$, $r = ??$

$$S = pe^{rt}$$

$$2p = p e^{r \times 6}$$

$$2p = p e^{6r} \rightarrow \frac{2p}{p} = \frac{p}{p} e^{6r}$$

$$2 = e^{6r} \rightarrow \ln 2 = \ln e^{6r}$$

$$\ln 2 = 6r (\ln e) \rightarrow 1$$

$$\therefore r = \frac{\ln 2}{6} = .1155 = .1155 \times 100\% = 11.55\%$$