

It is also important to note that your net or take-home pay (after taxes) is less than your gross pay (before taxes). Assuming that your net pay is 73% of your gross pay, what minimum gross annual salary will you need to make to have the monthly net salary stated above? Show your work for making this calculation.

Show work here.

$$\frac{G \cdot 73}{.73} = \frac{2766.71}{.73}$$

$$G \approx \$3,790.01$$

monthly

gross annual salary

$$= (3790.01)(12)$$

$$= \$45,480.12$$

Minimum gross annual salary = \$45,480.12

**Part II: Selling the House**

Let's suppose that after living in the house for 10 years, you want to sell. The economy experiences ups and downs, but in general the value of real estate increases over time. To calculate the value of an investment such as real estate, we use continuously compounded interest.

Find the value of the home 10 years after purchase assuming a continuous interest rate of 4%. Use the full purchase price as the principal. Show your work.

Show work here.

$$A = Pe^{rt}$$

$$= 201,000e^{(.04)(10)}$$

$$= 201,000e^4$$

$$= 201,000(1.491824698)$$

$$A = \$299,857 \text{ value of home 10 years}$$
  

$$P = Ae^{-rt}$$

$$= 261,441.80e^{-(.04)(10)}$$

$$= 261,441.80e^{-4}$$

$$P = \$175,250 = \text{principal after 10 yrs}$$
  

$$M.P. = \frac{180,900 \left(\frac{.04}{12}\right)}{1 - \left(1 + \frac{.04}{12}\right)^{-12(10)}}$$

$$= \frac{180,900(0.00333333333)}{1 - (1.00333333333)^{-120}}$$

$$= \frac{602.999994}{.3292339135}$$

$$M.P. = \$1,831.52$$
  

$$P = \$122,777 = \text{Principal of Loan}$$

Value of home 10 years after purchase \$299,857.00