1. You want to borrow $18,000 to buy a new car and your bank is willing to loan you the money at 5.7% compounded monthly for 5 years.
   a. How much will your monthly payments be?

   $345.49

   \[ D = 18000, r = 5.7\% = 0.057, m = 12, t = 5, \frac{r}{m} = 0.00475, mt = 60 \]

   \[ P = D \cdot \frac{r/m}{1 - (1 + \frac{r}{m})^{-mt}} \]

   \[ P = 18000 \cdot \frac{0.00475}{1 - (1.00475)^{-60}} = 345.49 \]

   b. Unfortunately, you can only afford a payment of $300 per month. As a result, what is the most money you could borrow (assuming the same interest rate and term)?

   $15,630.20

   \[ P = 300, r = 5.7\% = 0.057, m = 12, t = 5, \frac{r}{m} = 0.00475, mt = 60 \]

   \[ PV = P \cdot \frac{1 - (1 + \frac{r}{m})^{-mt}}{r/m} \]

   \[ PV = 300 \cdot \frac{1 - (1.00475)^{-60}}{0.00475} = 15630.20 \]
You want to buy a $14,000 new car and the dealership’s finance office is willing to loan you the money at 3.9% compounded monthly for 3 years.

a. How much will your monthly payments be?

\[
P = D \cdot \frac{r \cdot m}{1 - (1 + \frac{r}{m})^{-mt}}
\]

\[
P = 14000 \cdot \frac{0.00325}{1 - (1.00325)^{-36}} = 412.72
\]

b. Unfortunately, you can only afford a payment of $350 per month. As a result, what is the most expensive car you could buy (assuming the same interest rate and term)?

\[
PV = P \cdot \frac{1 - (1 + \frac{r}{m})^{-mt}}{r \cdot m}
\]

\[
PV = 350 \cdot \frac{1 - (1.00325)^{-36}}{0.00325} = 11872.65
\]