1. For the following 30-year FRMs, compute the monthly mortgage payments:
   (a) \( P = 200,000 \), \( K = 7\% \). Also obtain MBR at the end of the third year; IE of the 10th month, the 5th year and the first three years.
   (b) \( P = 150,000 \), \( K = 6.5\% \). Also obtain MBR at the end of the fifth year; IE of the 20th month, the 10th year and the first five years.
   (c) \( P = 100,000 \), \( K = 6\% \). Also obtain MBR at the end of the tenth year; IE of the 30th month, the 20th year and the whole term of the mortgage.

2. For the following 15-year FRMs, compute the monthly payments:
   (a) \( P = 200,000 \), \( K = 5.5\% \). Also obtain MBR at the end of the third year; IE of the 5th month, the 5th year and the first five years.
   (b) \( P = 150,000 \), \( K = 5\% \). Also obtain MBR at the end of the fifth year; IE of the 20th month, the 10th year and the first five years.
   (c) \( P = 100,000 \), \( K = 4.5\% \). Also obtain MBR at the end of the tenth year; IE of the 30th month, the 8th year and the whole term of the mortgage.

3. In Problems 1 and 2 above (all parts),
   (a) if you decide to pay an additional principal repayment of $100 per month, how soon you can payoff each mortgage?
   (b) if you pay an additional lump sum principal repayment of $20,000 at the end of the third year, how soon you can payoff each mortgage?

4. You take a $200,000 VRM for 30 years. What is your monthly payment?
   (a) The mortgage rates are set at 9% for the first 10 years, 10% for the next 10 years and 12% for the last 10 years.
   (b) The mortgage rates are set at 5% for the first 5 years, 6% for the next 10 years and 8% for the last 15 years.

5. Compute the monthly payments for the following 15-year $100,000 VRMs with the following mortgage rates:
   (a) 6% for years 1-5, 8% for years 6-10, and 10% for years 11-15.
   (b) 6% for years 1-3, 8% for years 4-6, and 10% for years 7-15.
   (c) 6% for years 1-2, 8% for years 3-4, and 10% for years 5-15.

6. Consider the following 30-year ARMs of the amount $100,000, compute the monthly payment for each year if the mortgage rates are:
   (a) 5% in year 1, 7% in year 2, 7.5% in year 3, 8% in year 4, and then converts to a FRM at 8.5% in the beginning of the 5th year.
   (b) 5% in year 1, 6% in year 2, 6.5% in year 3, 7% in year 4, and then converts to a FRM at 8% in the beginning of the 5th year.
(c) 6% in year 1, 7% in year 2, 8% in year 3, 9% in year 4, and then converts to a FRM at 10% in the beginning of the 5th year.

7. Compute $MP_1$, $MP_{101}$, $MP_{360}$, $MB_{60}$, $MB_{300}$ and $IE_{301}$ for the following GPMs:
   (a) $P = 200,000$, mortgage rate = 9%, $T = 30$ and $g = 4\%$ per year.
   (b) $P = 200,000$, mortgage rate = 10%, $T = 30$ and $g = 3\%$ per year.
   (c) $P = 200,000$, mortgage rate = 8%, $T = 30$ and $g = 2\%$ per year.

8. Consider the following 30-year term GPM (TGPM) of the amount $100,000. Find $MP_1$, $MP_{50}$, $MP_{121}$?
   (a) $K = 10\%$, the monthly payments grow at 5%/yr rate for 7 years then level payments afterwards.
   (b) $K = 8\%$, the monthly payments grow at 3%/yr rate for 5 years then level payments afterwards.
   (c) $K = 6\%$, the monthly payments grow at 4% per year for 10 years then level payments thereafter.

9. Consider the following 30-year GPM with constant monthly payments in each year but the payments have constant yearly graduated increase. Compute the monthly payments for year 1, year 10, year 20 and year 30.
   (a) $P = 100,000$, mortgage rate = 6.75%, $g = 3%$/yr.
   (b) $P = 150,000$, mortgage rate = 7%, $g = 2.5%$/yr.
   (c) $P = 200,000$, mortgage rate = 7.5%, $g = 5%$/yr.