Math 1030 #10b
Loans, Credit Cards and Mortgages
Credit Cards

≈ ⨋ √ ∞ ∑ π
Credit Cards

EX 1: You have $4000 of credit card debt that you would like to pay off in the next 3 years. You will not make any additional charges on your card during that time. The APR on your card is 21%.

\[
P = 4000, \quad APR = 0.21, \quad n = 12, \quad Y = 3
\]

a) What will your monthly payments be?

\[
PMT = \frac{P \cdot \left( \frac{APR}{n} \right)}{1 - \left(1 + \frac{APR}{n}\right)^{-nY}} \approx 150.70
\]

b) How much will you pay during those 3 years?

\[
\text{Total payments} = 150.70 \times (12)(3) = 5425.20
\]

c) What is the overall percentage you paid in interest?

\[
\frac{5425.20 - 4000}{4000} = \frac{1425.20}{4000} \approx 35.6\%
\]
EX 2: If you put $3000 on a credit card with 21% interest rate at age 20 and just make minimum payments of $60 each month, how much will you still owe at age 25?

\[
PMT = 60, \ n = 12, \ Y = 5, \ AP\text{R} = 0.21
\]

\[
PMT = \frac{P \cdot \left( \frac{\text{AP\text{R}}}{n} \right)}{1 - \left( 1 + \frac{\text{AP\text{R}}}{n} \right)^{-nY}}
\]

\[
0.0175 = \frac{0.21}{12}
\]

\[
60 = P \left( \frac{0.21}{12} \right) \frac{1}{\left( 1 + \frac{0.21}{12} \right)^{-12(5)}}
\]

\[
\frac{60(1 - 1.0175^{-60})}{0.0175} = P \Rightarrow P = \frac{2217.84}{\text{pay off this amt.}}
\]

Still owe $3000 - 2217.84

$782.16

Total paid = 60(12)(5) = $3600