### CREDIT CARDS

- \( P \) = Starting balance
- PMT = regular payment amount
- APR = annual percentage rate of interest

(in decimal form if doing calculations by hand)

<table>
<thead>
<tr>
<th>Formula</th>
<th>Example</th>
<th>Using TVM Solver (TI-83:FINANCE; TI-83+, TI-84:APPS)</th>
</tr>
</thead>
</table>
| \( PMT = \frac{P \times \frac{APR}{n}}{1 - \left(1 + \frac{APR}{n}\right)^{-n \times Y}} \) | You have a credit card balance of $4000 with an annual interest rate of 19%. You decide to pay off your debt over the next 18 months (1.5 years) and make no further credit card purchases during this time. \( PMT = \frac{4000 \times \left(\frac{.19}{12}\right)}{1 - \left(1 + \frac{.19}{12}\right)^{(-12 \times 1.5)}} \) = $257.13 | (1) Press \[ \text{2nd} \ x^{-1} \] (FINANCE) or \[ \text{APPS} \]  
(2) Choose 1: TVM Solver  
(3) Enter \( N = 12 \times 1.5 \) or 18 = number of payment periods  
\( I\% = 19 \)  
\( PV = -4000 \) (negative means outflow of cash)  
\( PMT = 0 \)  
\( FV = 0 \) = future value  
\( P/Y = 12 \) = number of payments per year  
\( C/Y = 12 \) = number of compounding periods per year \( (12 \) for monthly)  
\( PMT = \) highlight END for end of month deposits  
(4) Arrow up to PMT since we are looking for the monthly payment.  
(5) Press ALPHA ENTER (SOLVE).  
- \( PMT = $257.13 \) which agrees with the formula calculation to the left, so you must pay $257.13 each month. |

\( n = \) number of payment periods per year  
\( Y = \) loan term in years
## CREDIT CARDS (continued)

<table>
<thead>
<tr>
<th>Month</th>
<th>Payment</th>
<th>Expenses (Purchases by credit card)</th>
<th>Interest</th>
<th>New Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>$4000</td>
<td></td>
<td>$4000</td>
</tr>
<tr>
<td>1</td>
<td>$175</td>
<td>$50</td>
<td>$63.33</td>
<td>4000 – 175 + 50 + 63.33 = $3938.33</td>
</tr>
<tr>
<td>2</td>
<td>$175</td>
<td>$40</td>
<td>$62.36</td>
<td>3938.33 – 175 + 40 + 62.36 = $3865.69</td>
</tr>
<tr>
<td>3</td>
<td>$175</td>
<td>$25</td>
<td>$61.21</td>
<td>3865.69 – 175 + 25 + 61.21 = $3776.90</td>
</tr>
<tr>
<td>4</td>
<td>$175</td>
<td>$100</td>
<td>$59.80</td>
<td>3776.90 – 175 + 100 + 59.80 = $3761.70</td>
</tr>
</tbody>
</table>

If you are able to pay off your credit card in the 5th month and make no further purchases, what would your payment be?

\[
(3761.70 \left(\frac{.19}{12}\right) + 3761.70) = \$3821.26
\]