**Future Value** \( S = P(1 + r)^n \)

**Present Value** \( P = S(1 + r)^{-n} \)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P )</td>
<td>Principal</td>
</tr>
<tr>
<td>( n )</td>
<td>Number of periods over which interest is earned</td>
</tr>
<tr>
<td>( r )</td>
<td>Interest rate per period</td>
</tr>
</tbody>
</table>

**Present Value of an Ordinary Annuity**

\[
A = R \left( \frac{1 - (1 + r)^{-n}}{r} \right)
\]

**Present Value of an Annuity Due**

\[
A = R \left( \frac{1 - (1 + r)^{-n}}{r} \right) (1 + r)
\]

**Future Value of an Ordinary Annuity**

\[
S = R \left( \frac{(1 + r)^n - 1}{r} \right)
\]

**Future Value of an Annuity Due**

\[
S = R \left( \frac{(1 + r)^n - 1}{r} \right) (1 + r)
\]

**Periodic payment into Sinking Fund**

\[
R = S \left( \frac{r}{(1 + r)^n - 1} \right)
\]

**Periodic payment of an Amortized Loan**

\[
R = A \left( \frac{r}{1 - (1 + r)^{-n}} \right)
\]

\[
\log_b(xy) = \log_b x + \log_b y
\]

\[
\log_b \left( \frac{x}{y} \right) = \log_b x - \log_b y
\]

\[
\log_y x = \frac{\log_b x}{\log_b y}
\]