1) Give an example of an inductive argument with a false conclusion.

2) Give an example of a deductive argument.

3) Give an example of a deductive argument such that:
   a) The premises of the argument are false, and the conclusion is false.
   b) The premises of the argument are false, but the conclusion is true.

Is it possible to have a deductive argument such that the premises are true but the conclusion is false?

4) Is the following a deductive argument? Explain.
   - A person registered for ART 101 is a registered university student.
   - Nick is a registered university student.
   Therefore:
   - Nick is registered for ART 101.

5) A class of 120 incoming freshmen is divided in two ways: men/women and dorm residents/non-residents according to the following table:

<table>
<thead>
<tr>
<th></th>
<th>residents</th>
<th>non-residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>men</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>women</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

Use a two-way Venn diagram to illustrate this situation.

6) State and prove the Pythagorean theorem.