Midterm #1

Name:

StudentID:

Major:

Time: 60 minutes.

Justify your solution and show all your steps. Answer each question on a seperate sheet. Make sure to look on the back side of this sheet.

1. In reviewing for an exam in your literatur survey course, you notice the following facts about the writers you studied:

   - Some of the novelists are also poets.
   - None of the novelists are playwrights.
   - All of the novelists were born in the 20th century.
   - All of the writers born in the 19th century are playwriters.

   (a) Draw a Venn diagram to organize the given information.
   (b) Could you have studied a novelist born in the 19th century?
   (c) Could you have studied a poet born in th 19th century?
   (d) Could you have studied a writer born in the 20th century that was both a playwright and a poet=

2. Consider the following pair of statements in which p, q and r represent propositions. Make a truth table for each statement and determine if the two statements are equivalent: *(p or q) and r ; (p and r) or (q and r)*

3. The Greenland ice sheet contains about 3 million cubic kilometers of ice. If completely melted, this ice would release about 2.5 million cubic kilometers of water, which would spread out over Earth's 340 million square kilometers of ocean surface. How much would sea level rise?

4. If a clock takes 5 seconds to strike 5:00 (chiming five times), how long does it take to strike 10:00 (chiming ten times)? Assume each chime occurs simultaneously (takes no time).

Veronika Josephine Ertl   *Math 1030*

5. Three guests checked into a hotel and paid $30 for their shared room. A while later, the desk clerk realised that the room should have cost only $25, so she gave the bellhop $5 to return it to the three guests. The bellhop realised that $5 couldn't be divided evenly among the three guests, so he kept $2 and gave $1 to each of the guests. It seems that each guest has spent $9 for the room (which makes $27) and the bellhop has $2, for a total of $29. Where is the missing dollar?

6. Between 2000 and 2010, the population of Las Vegas increased from 478,000 to 565,000. Over the same decade, the population of Dallas increased from 1,189,000 to 1,245,000. Which city had the greater absolute growth in population? Which city had the greater percentage growth in population?

7. Americans consume an estimated 7.6 billion pounds of candy (excluding chewing gum) oer year. Express this quantity in terms of pounds per person per month. (Use a population of 305 million.)

8. Rosa invests $3000 in an account with an APR of 4% and annual compounding. Julian invests $2500 in an account with an APR of 5% and annual compounding.

   (a) Compute the balance in each account after 5 and 20 years.

   (b) Determine, for each account and for 5 and 20 years, the percentage of the balance that is interest.

   (c) Comment on the effect of interest rates and patience.