**Due before 8:30 AM on 10/8 (15 pts.)**

Logical Operators

1. Complete the truth table. (8 pts.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **a** | **b** | **c** | **a or b** | **(not (a or b)) and c** |
| **T** | **T** | **T** | **T** | **F** |
| **T** | **T** | **F** | **T** | **F** |
| **T** | **F** | **T** | **T** | **F** |
| **T** | **F** | **F** | **T** | **F** |
| **F** | **T** | **T** | **T** | **F** |
| **F** | **T** | **F** | **T** | **F** |
| **F** | **F** | **T** | **F** | **T** |
| **F** | **F** | **F** | **F** | **F** |

1. Give the logical opposites of these conditionals. (4 pts.)
   1. x < y **x >= y**
   2. x >= y **x < y**
   3. x <= 18 and y == 5 **x > 18 or y != 5**
   4. x >= 20 and y != 24 **x < 20 or y == 24**
2. Simplify the following conditional. (3 pts.)

if not(fuel\_level >= 50) and not(battery\_charge >= 80):

    print("Major Tom to ground control.")

else:

    print("Ready for liftoff!")

**Solution 1**

**if fuel\_level < 50 or battery\_charge < 80:**

**print("Major Tom to ground control.")**

**else:**

**print("Ready for liftoff!")**

**Solution 2**

**if fuel\_level >= 50 and battery\_charge >= 80:**

**print("Ready for liftoff!")**

**else:**

**print("Major Tom to ground control.")**