Relational and Logical Operators

INSTRUCTIONS: This is a rare homework assignment in which you are NOT going to use MATLAB at all. Please print this document out and fill it in using pencil or pen. When you are finished, type in your answers into the answer sheet on the last page. When you upload your assignment to D2L upload ONLY the answers page, not the rest of this document.

# Part I

This is ungraded but will help you. Fill in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INPUT** | | **OUTPUT** | | | | |
| **A** | **B** | **AND**  **A&B** | **OR**  **A|B** | **XOR(A,B)** | **NOT**  **~A** | **NOT**  **~B** |
| False | False |  |  |  |  |  |
| False | True |  |  |  |  |  |
| True | False |  |  |  |  |  |
| True | True |  |  |  |  |  |

# Part II

# Now let’s combine those logical and rational expressions and start to figure out how they work together. Look at each of these logic problems and figure out what the answer will be. In each case it will be either (1) True or (0) False. DO NOT TRY THEM OUT IN MATLAB UNTIL YOU HAVE YOUR ANSWERS DOWN! Remember NO COPY AND PASTE!

# Problems

% Defined constants

smart=29; dumb=-299; dogs = 22/7; cats = 25/9; root = 23-2; yes=1; no=0;

1. >> answer1 = (1 < 2) & (smart > dumb)
2. >> answer2 = root – 2 > root & root > 0
3. >> answer3 = 1 == 1 & 2 == 1
4. >> answer4 = 1 == yes | 2 ~= 1
5. >> answer5 = 1 & 1 == 1
6. >> answer6 = cats > dogs & no ~= 0
7. >> answer7 = 1 | 1 == 1
8. >> answer8 = 1 ~= 0 & 2 == 1
9. >> answer9 = ~(1 & 0)
10. >> answer10 = ~(answer1 == 1 & 0 ~= 1)
11. >> answer11 = 3 == 3 & (~ (42 == 21 \* 2 | 65-2 == 65 + 3))
12. >> answer 12 = cats <= dogs & (~ (answer1 == 1 | answer1 == answer6))
13. >> answer13 = root == cats | cats <= dogs & dogs == dogs
14. >> answer14 = xor(yes,no)
15. >> answer15 = xor(yes,yes) | yes == 1
16. >> answer16 = yes & yes == yes | no == ~yes
17. >> answer17 = yes & yes | no & yes & xor(yes,no)

Answer Sheet

Name:

|  |  |
| --- | --- |
| **Problem #** | **Answer: write 0 or 1** |
| **1** |  |
| **2** |  |
| **3** |  |
| **4** |  |
| **5** |  |
| **6** |  |
| **7** |  |
| **8** |  |
| **9** |  |
| **10** |  |
| **11** |  |
| **12** |  |
| **13** |  |
| **14** |  |
| **15** |  |
| **16** |  |
| **17** |  |