DeMorgan's Laws Worksheet

Use DeMorgan's Laws to "distribute" the not symbols and rewrite the condition

1. `!( x == 3)` _____

2. `!(2 < y)` _____

3. `!(x >= 8)` _____

4. `!(x == 2 && x == 1)` _____

5. `!(x != y && y != z)` _____

6. `!(x >= 5 || y < 6)` _____

7. `!(!(x == 4) || x <= 8)` _____

8. `!(x < 6 && !(x == 3))` _____

REVIEW: Evaluate each expression to determine whether it is true, false or invalid. If the expression is valid, determine if the evaluation of the expression can be short-circuited. Given the following variable declaration and initialization:

```
int favNum = 25;
```

9. `favNum > 5 && < 20`
   - true, false or invalid?
   - can be short-circuited?

10. `10 – 4 == 6 || 4 == 4 || !(favNum < 10)`
   - true, false or invalid?
   - can be short-circuited?

11. `!30 == favNum || 10 < 12`
   - true, false or invalid?
   - can be short-circuited?

12. `false && true && true`
    - true, false or invalid?
    - can be short-circuited?
13. `!false && false`
    - true, false or invalid?
    - can be short-circuited?

Use DeMorgan's Laws to "distribute" the not symbols and rewrite the condition
Assume that the variable has been initialized appropriately with some valid int value..
Given the following variable declaration and initialization:

`int myNum = <some valid int value>;`

14. `!(myNum < 10) || myNum == 20` _____

15. `!(myNum != 9 && !(myNum >= 7))` _____

16. `5 == myNum || !(!(myNum > 5))` _____

Evaluate each expression to determine whether it is true, false or invalid.

17. `3 != 3 || !(3 > 6) && 5 == 7`
    - true, false or invalid?
18. `true || true && false`
    - true, false or invalid?