Booelan Algebra HomeWork # 1

Basic Laws of Boolean Algebra
Are the following Boolean Expression *EQUAL*?

1. $R(S+T)=(T+S)R$

2. $(J+K)L=(J+L)K$

3. $JKL+A(BC)=(JK)L+CAB$

4. $PQ+(B+W)+R=R+W+B+PQ$

5. $Z+BW=(W+Z)B$

6. $A(J+KLM)=MLK+JA$

7. $(DE+G+FC)+H=G+H+CF+DE$

8. $(A+B)(C+D)=AC+BD$

Simplify the following

9. $P+P=$

10. $(SR)(RS)=$

11. $A+B+A+C+B+D=$

12. $X\bar{Y}\bar{Z}+X\bar{Y}Z$

13. $(B+C)(B+C)DED=$

14. $A+(F+G)H+A+G=$

15. $PWH+DB+HPW=$

16. $\bar{\bar{C}}+\overline{DF}+\overline{\overline{FD}}+G+C=$

17. $\left(\overline{\overline{\overline{Q+R}}+S}\right)+\overline{\overline{S}}+(R+Q)=$

18. $\left(K+\overline{\overline{\overline{K}}}\right)K\overline{K}=$

19. $\overline{W(XY)Z}+WX\overline{\overline{YZ}}=$

20. $\left[\overline{\overline{\overline{Q}}+R\ \overline{ST}}\right]\left[\overline{(ST)}\ \overline{R}+Q\right]=$

21. $X\overline{X}\ \overline{\overline{X}}=$

22. $HH\left(H+\overline{H}\right)=$

23. $(R+S)\left(A\ \overline{A}+\overline{D}EGD\right)(M+N)=$

24. $\overline{\overline{R}}+\left(\overline{S+\overline{S}}\right)R=$

25. $\left(C+\overline{C}\right)F+DC\overline{D}+(J+K)\left(\overline{J+K}\right)=$

26. $\left(N+\overline{N}\right)\left(P\ \overline{Q}+\overline{R}S\right)=$

27. $D\left(\overline{\overline{E}}+F+\overline{E}\right)=$

28. $(X+Y)\overline{(X+Y)}(Y+X)=$

29. $KJ+L(M+N)+\overline{JK}=$

30. $\overline{\left(C+\overline{C}\right)}+\left(M+L+\overline{M}\right)=$

31. $K\ \overline{K}+(M+N)\overline{(M+N)}+K\ \overline{\overline{K}}=$

32. $(A+B+C)\left(\overline{A}+\overline{B}+\overline{C}\right)=$