Please note that these are warm up problems for more practice, and do not represent the quiz questions.

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1. By using a truth table prove or disprove each:

$x(\bar{x} + y) = xy$

| $x$ | $y$ | $\bar{x}$ | $\bar{x}$ +y | LS | RS |
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$(AB + A'B'C')(A'B + AC) = ABC$

| $A$ | $B$ | $C$ | $\bar{A}$ | $\bar{B}$ | $\bar{C}$ | $AB$ | $\bar{A}\,\bar{B}\,\bar{C}$ | $AB + \bar{A}\,\bar{B}\,\bar{C}$ | $A'B$ | $AC$ | $A'B + AC$ | LS | RS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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2. By using the Boolean Algebra theorems prove each. Show all the steps similar to the class work.

$D'[(B'+D)(A'+B')]' = BD'$

| Step | Expression | Reason |
|---|---|---|

$xyz' + x'yz + x'y = y(z'+x')$

| Step | Expression | Reason |
|---|---|---|

3. Which statements are always true? Explain. Use the Boolean algebra rules to show your work for each expression

| | |
|---|---|
| 1) $(ab + c) + (a' + b')c'$ | 2) $ab + ab'$ |
| 3) $abc(a' + b' + c')$ | 4) $a' + (a + bc)(a' + b) + a$ |

4. Consider the expression $\overline{a\ \bar{b}}(cd + \text{a}\ \bar{b})$.
Which one of the absorption rules is applicable to it? Name the rule (ex:[14a]) and specify what should we take as the x and y based on the given expression.
What is the simplified form of the given expression according to the rule you chose?

5. Simplify as much as possible. Apply one rule at a time and show the work similar to the class work.

$ABC + \bar{A} + A\bar{B}C =$

$\overline{(\bar{A} + B)(\overline{B\bar{A}})} =$

6. Write the given expression in minterm and maxterm form. Complete form and appropriate notation please. You do not need to simplify this expression.

$$F = xy' + xyz' + y'z'$$

Minterm:

Maxterm: