

ACSL

2005 - 2006

American Computer Science League

Contest #3

Intermediate Division

1. Boolean Algebra

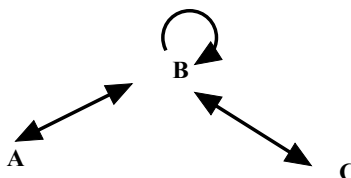
Simplify the expression until only AND and NOT gates are used.

$$\overline{\overline{A + AB(B + C)C}}$$

1.

2. Graph Theory

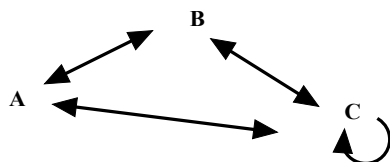
Given the following directed graph find the total number of different paths of length 2



2.

3. Graph Theory

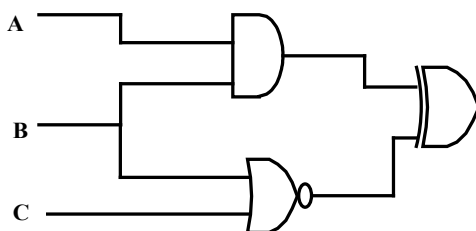
How many different cycles are in the directed graph below?



3.

4. Digital Electronics

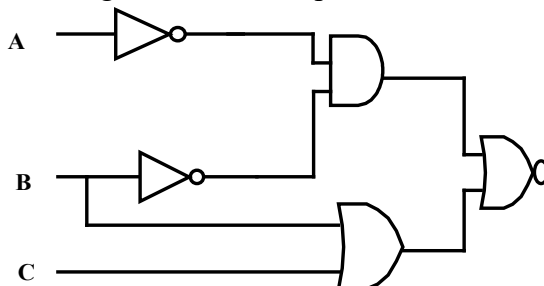
How many ordered triples make the following circuit TRUE?



4.

5. Digital Electronics

Translate the following circuit to a simplified Boolean expression.



5.