

Intermediate Division

1. **Boolean Algebra**

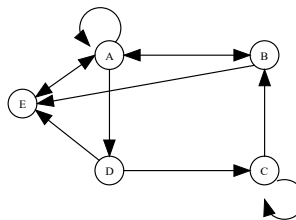
How many ordered triples make the following expression TRUE?

$$ABC + \overline{A}BC + \overline{A}\overline{B}C + \overline{A}\overline{B}\overline{C}$$

1.

2. **Graph Theory**

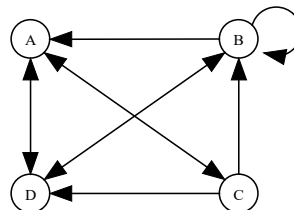
How many different cycles starting at vertex A exist in the directed graph?



2.

3. **Graph Theory**

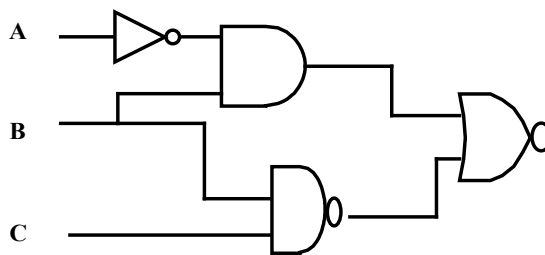
How many paths of length 3 exist from vertex A to vertex D in this directed graph?



3.

4. **Digital Electronics**

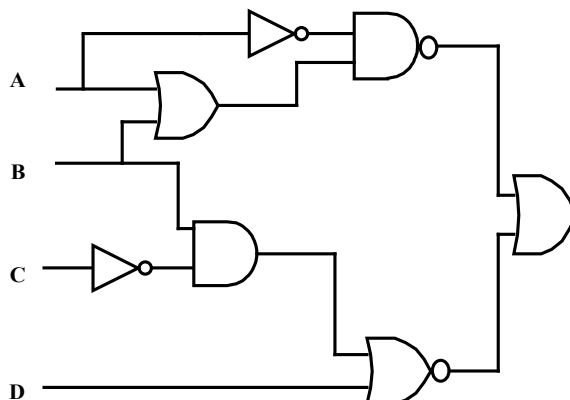
Convert this circuit to a Boolean expression and simplify.



4.

5. **Digital Electronics**

How many ordered 4-tuples make this circuit FALSE?



5.