

1) Prove that  $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P) =$   
 $(P \vee Q \vee R) \wedge (P \vee \neg Q \vee R) \wedge (\neg P \vee Q \vee \neg R)$ .

2) Find the PDNF of the statement  
 $(Q \vee (P \wedge R)) \wedge \neg((C \wedge P \wedge R) \wedge Q)$ .

3) Prove that the statement "every positive integer is the sum of the squares of three integers" is false.

4) Using Generating function, solve the recurrence relation.

$$a_n - 5a_{n-1} + 6a_{n-2} = 0$$

$$\text{where } n \geq 2, a_0 = 0; a_1 = 1$$

5) Use the method of generating function to solve the recurrence relation.

$$a_n = 3a_{n-1} + 1; n \geq 1 \text{ given that } a_0 = 1$$

6) Find the number of integers between 1 and 250 both inclusive that are not divisible by the integers 2, 3, 5 & 7.

7) Solve:

$$S(k) - 5S(k-1) + 6S(k-2) = 2 \text{ with } S(0) = 1,$$

$$S(1) = -1.$$

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