Q NO 3

Ans
⇒ $1^2 + 2^2 + 3^2 + ? ...... + n^2 \quad \frac{n(n+1)(2n+1)}{6}$

$n \geq 1$

Sol
Put (1) is true
for $n = 1$

L.H.S $P(1) = n^2$
$P(1) = (1)^2$
$1 = 1$

Now take R.H.S
$P(1) = \frac{n(n+1)(2n+1)}{6}$

Put value of $n = 1$
$\Rightarrow P(1) = 1(1+1)(2(1)+1)$

$\Rightarrow P(1) = \frac{1(2)(2+1)}{6}$

$P(1) = \frac{6}{6} = 1$

So
L.H.S = R.H.S
of P(1)
Hence P(1) is true.

Q NO 4

The six different types of relations are

(i) Reflexive relation

(ii) Symmetric relation

(iii) transitive relation

(iv) Equivalance relation

(v) identity relation

(vi) inverse relation.

let let us discuss the above different types of relations in detail

Reflexive Relation.

The Rule for reflexive relation is given below

Every element is related to itself"

Let R be a reflexive relation defined on the set A and $a \in A$, then $R = \{(a,a) \,/\, \text{for all } a \in A\}$

that is, very element of A has to be related to itself.

Example.

Let $A = \{1, 2, 3\}$ and R be a reflexive relation defined on set A

Then, $R = \{(1,1), (2,2), (3,3)\}$

Symmetric Relation.

Let R be a symmetric relation defined on the set A and

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discrete structure.

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Q1

Sol
Formula · an = a1 + (n-1)d

Givend data.

$a_3 = 7$

$a_8 = 17$

Required Data

$a_{36} = ?$

Now

Sol $a_3 = a_1 + (7-1)d$

$7 = a_1 + 6d$

$7 = a_1 + 6d$

$a_1 + 6d = 7$ Eq (1)

and

$a_8 = a_1 + (17-1)d$

$17 = a_1 + 16d$

$a_1 + 16d = 17$ Eq (2)

subtract (i) from 2.

$- a_1 + 16d = 17$

$- a_1 + 6d = 7$

$10d = 10$

$d = 1$

Now put value of $d = 1$
in Eq (1)

$a_1 + 6d = 7$

$a_1 + 6(1) = 7$

$\boxed{a_1 = 1}$

Now find
a_{36}

$a_{36} = a_1 + (36 - 1)d$

$a_{36} = a_1 + 35d$

Put value of $d = 1$

$a_{36} = 1 + 35(1)$

$a_{36} = 36 \rightarrow$ Ans

QNo 2.

Find $f \circ g(x)$ and $g \circ f(x)$

if $f(x) = 2x + 3$

$g(x) = x^2 + 5$

Sol

$f \circ g(x) = g \circ f(x)$

take L.H.S

$f \circ g(x) = 2(-x^2 + 5) + 3$

$f \circ g(x) = -2x^2 + 10 + 3$

$f \circ g(x) = -2x^2 + 13 \Rightarrow$ L.H.S

Now the

$g \circ f(x) = -(2x+3)^2 + 5$

$g \circ f(x) = -(4x^2 + 9 + 12x + 5$

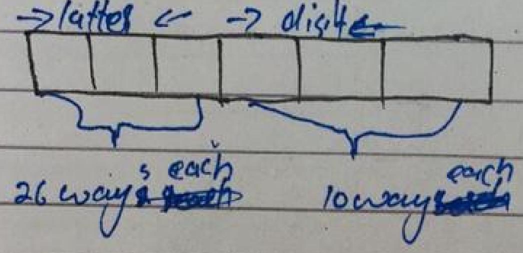
$g \circ f(x) = -4x^2 - 12x - 4$

$f \circ g(x) = -2x^2 + 13$

$g \circ f(x) = -4x^2 - 12x - 4$

Q NO (5)

Sol

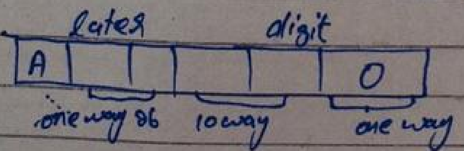


a)

Hence by the products Rule other is a total of

$26 \times 26 \times 26 \times 10 \times 10 \times 10 = 17,576,000$ diffrent lincense plate possible

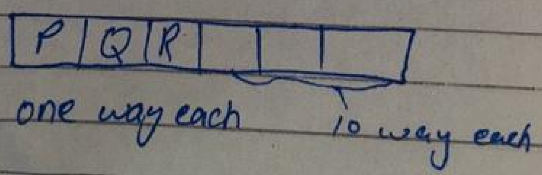
(b) How many license plat could begain with 'A' and end with 0.



c) $1 \times 26 \times 26 \times 10 \times 10 \times 1 = 67600$

diffrent licence could be possible

c) How using licence plat begain with PQR.



$1 \times 1 \times 1 \times 1 \times 10 \times 10 \times 10 = 1000$

licence plate are possible