16|4|2020 ③

Date:

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M.D.

The 4) – Every odd integer is of the form (i) $2q+1$ (ii) $2q-1$ (iii) $4q\pm1$ (iv) $\pm(4q+1)$

Proof: –

We know that $2q$ is an even integer, so we have $2q+1$ and $2q-1$ are odd integers. Also we know that every integer has one of the form $4q$, $(4q\pm1)$, $(4q\pm2)$ in which $4q$, $4q\pm2$ are even integers. Therefore $(4q\pm1)$ are odd integers.

Now $4q-1 = -(-4q+1) = -(4(-q)+1)$.

So $\pm(4q+1)$ is an odd integer.

M.D.

The 5 Do urself.

M.D. The: 6 One of every three consecutive integers is divisible by 3.

Proof: – Let $a, (a+1), (a+2)$ be any three consecutive integers. Then 'a' is of the form $3q$, $(3q+1)$ or $(3q-1)$. If $a = 3q$ then it is divisible by 3. If $a = 3q+1$ then

$a+2 = 3q+1+2 = 3q+3 = 3(q+1)$, means divisible by 3. If $a = 3q-1$ then

$a+1 = 3q-1+1 = 3q$, divisible by 3.

Thus one of every three consecutive integers is divisible by 3.

The. 7: – Do urself.

Ex :- find the minimal remainder of 217 with respect to 39.

Proof :-

we have

$217 = 39 \times 5 + 22$

$\boxed{a = bq + r}$ $r > \frac{b}{2}$

Here

$a = 217, \quad b = 39, \quad r = 22$

Here remainder $r = 22 > \frac{39}{2}$

Now the minimal remainder is

$= -(39 - 22) = -17$

$\boxed{-(b - r) = \text{minimal remainder}}$

This is verified as —

$217 = 39 \times 6 - 1(17)$

where

$0 < 17 < \frac{39}{2}$