



## NCERT Solutions by Dev Anoop (Bathinda)

### Ex 1.1 Class X, Page 3

④ let  $a$  be any positive integer,  $b = 3$  by using euclid's div. algorithm

$a = 3q + r$  where  $q, r$  are integers

$$0 \leq r < 3$$

Possible values of  $r$  are 0, 1, 2

if  $r = 0$

$$a = 3q$$

Squaring both sides

$$\begin{aligned} a^2 &= 9q^2 \\ &= 3(3q^2) \end{aligned}$$

$$= 3m$$

where  $m$  is some integer

if  $r = 1$

$$a = 3q + 1$$

$$\begin{aligned} a^2 &= 9q^2 + 6q + 1 \\ &= 3(3q^2 + 2q) + 1 \\ &= 3m + 1 \end{aligned}$$

if  $r = 2$

$$a = 3q + 2$$

$$\begin{aligned} a^2 &= 9q^2 + 12q + 4 \\ &= 9q^2 + 12q + 3 + 1 \\ &= 3(3q^2 + 4q + 1) + 1 \\ &= 3m + 1 \end{aligned}$$