PAGE: 98



EXERCISE 6.2

- 1. Find the square of the following numbers.
- i. 32
- ii. 35
- iii. 86
- iv. 93
- v. 71
- vi. 46

Solution:

- i. (32)²
- $=(30+2)^2$
- = $(30)^2 + (2)^2 + 2 \times 30 \times 2$ [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]
- = 900 + 4 + 120
- = 1024
- ii. (35)²
- $=(30+5)^2$
- = $(30)^2 + (5)^2 + 2 \times 30 \times 5$ [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]
- = 900 + 25 + 300
- = 1225
- iii. (86)²
- $= (90 4)^2$
- = $(90)^2 + (4)^2 2 \times 90 \times 4$ [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]
- = 8100 + 16 720
- = 8116 720
- = 7396
- iv. (93)2
- $= (90+3)^2$
- = $(90)^2 + (3)^2 + 2 \times 90 \times 3$ [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]
- = 8100 + 9 + 540
- = 8649
- v. (71)²



$$= (70+1)^2$$

=
$$(70)^2 + (1)^2 + 2 \times 70 \times 1$$
 [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]

$$= 4900 + 1 + 140$$

$$= (50 - 4)^2$$

=
$$(50)^2 + (4)^2 - 2 \times 50 \times 4$$
 [Since, $(a+b)^2 = a^2 + b^2 + 2ab$]

$$= 2500 + 16 - 400$$

2. Write a Pythagorean triplet whose one member is.

i. 6

Solution:

For any natural number m, we know that 2m, m2-1, m2+1 is a Pythagorean triplet.

i.
$$2m = 6$$

$$\Rightarrow$$
 m = 6/2 = 3

$$m^2-1=3^2-1=9-1=8$$

$$m^2+1=3^2+1=9+1=10$$

 \therefore (6, 8, 10) is a Pythagorean triplet.

$$\Rightarrow$$
 m = 14/2 = 7

$$m^2-1=7^2-1=49-1=48$$

$$m^2+1 = 7^2+1 = 49+1 = 50$$

∴ (14, 48, 50) is not a Pythagorean triplet.

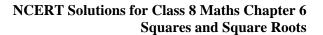
$$\Rightarrow$$
 m = 16/2 = 8

$$m^2-1 = 8^2-1 = 64-1 = 63$$

$$m^2$$
+ 1 = 8^2 +1 = 64 +1 = 65

∴ (16, 63, 65) is a Pythagorean triplet.

iv.
$$2m = 18$$





$$\Rightarrow$$
 m = 18/2 = 9

$$m^2-1 = 9^2-1 = 81-1 = 80$$

$$m^2+1 = 9^2+1 = 81+1 = 82$$

∴ (18, 80, 82) is a Pythagorean triplet.