4. Find the domain and range of the relation

R

given by $R = \{(x, y): y = x + \frac{6}{x};$ where $x, y \in N$ and $x < 6\}$.

Ans: Given: A relation

R

.

Domain and range are values of x and y for which relation is defined.

R is defined only for $x = \{1, 2, 3\}, y \in N$

$\therefore$ Domain of $R = \{1, 2, 3\}$

for, $x = 1, y = 7,$

$x = 2, y = 5,$

$x = 3, y = 5.$

$\therefore$ Range of $R = \{7, 5\}.$

8.If

$$R_2 = \{(x, y) | x \text{ and } y \text{ are integers and } x^2 + y^2 = 64\}$$

is a relation, then find the value of

$R_2.$

Ans: Given: A relation

$$R_2 = \{(x, y) | |\ \text{x and y are integers and } x^2 + y^2 = 64\}$$

.

Use the given condition in a relation and then write the set in roster form.

Since,

64

is the sum of square of

0 and $\pm 8.$

$\Rightarrow$ when $x = 0$, then $y^2 = 64,$

$\Rightarrow y = \pm 8$

$\Rightarrow x = 8,$ then $y^2 = 64 - (8)^2 = 0$

$\Rightarrow x = -8,$ then $y^2 = 64 - (-8)^2 = 0$

$\therefore R_2 = \{(0, 8), (0, -8), (8, 0), (-8, 0)\}$