9. If R$_3$ = {(x, |x|) |x is a real number} is a relation. Then find domain and range of R$_3$.

Solution:

According to the question,

R$_3$ = {(x, |x|) |x is a real number} is a relation

Domain of R$_3$ consists of all the first elements of all the ordered pairs of R$_3$, i.e., x,

It is also given that x is a real number,

So, Domain of R$_3$ = R

Range of R contains all the second elements of all the ordered pairs of R$_3$, i.e., |x|

It is also given that x is a real number,

So, |x| = |R|

⇒ |x|≥0,

i.e., |x| has all positive real numbers including 0

Hence,

Range of R$_3$ = [0, ∞)