RD Sharma Solutions Class 11 Maths Chapter 31 Ex 31.1

Mathematical Reasoning Ex 31.1 Q1 (i)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

The sentence "Listen to me , Ravi!" is an exclamatory sentence. So, it is not a statement.

Mathematical Reasoning Ex 31.1 Q1 (ii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

This sentence is always false, because there are sets which are not finite. Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q1 (iii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

This sentence is always false, because there are non-empty sets whose intersection is empty. Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q1 (iv)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

Some cats are black and some not. So, the given sentence may or may not be true. Hence, it is not a statement

Mathematical Reasoning Ex 31.1 Q1 (v)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

The sentence "Are all circles round ?" is an interrogative sentence. So, it is not a statement.

Mathematical Reasoning Ex 31.1 Q1 (vi)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

The "All triangles have three sides." is a true declarative sentence. So, it is a true statement.

Mathematical Reasoning Ex 31.1 Q1 (vii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

This sentence is always false, because there are rhombuses that are not squares. Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q1 (viii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

If $x > 0$,

$$x^2 + 5|x| + 6 = 0$$
$$\Rightarrow x^2 + 5x + 6 = 0$$
$$\Rightarrow x = -3 \text{ or } x = -2$$
But, since $x > 0$, the equation has no roots.

If $x < 0$,
$$x^2 + 5|x| + 6 = 0$$
$$\Rightarrow x^2 - 5x + 6 = 0$$
which has no real roots.
So, the sentence $x^2 + 5x + 6 = 0$ is always true.

Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q1 (ix)

It is not a statement.

The sentence "This sentence is a statement." cannot be assigned a truth value of either true or false, because either assignment contradicts the sense of the sentence.

Mathematical Reasoning Ex 31.1 Q1 (x)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

The sentence "Is the earth round ?" is an interrogative sentence. So, it is not a statement.

Mathematical Reasoning Ex 31.1 Q1 (xi)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

The sentence "Go!" is an exclamatory sentence. So, it is not a statement.

Mathematical Reasoning Ex 31.1 Q1 (xii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

"The real number x is less than 2" is not a statement, because its truth or falsity cannot be confirmed without knowing the value of x.

Mathematical Reasoning Ex 31.1 Q1 (xiii)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

"There are 35 days in a month" is a false declarative sentence. So, it is a false statement.

Mathematical Reasoning Ex 31.1 Q1 (xiv)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

"Mathematics is difficult" is true for those who may not like mathematics. But, for others, it may not be true. So, the given sentence may or may not be true. Hence, it is not a statement

Mathematical Reasoning Ex 31.1 Q1 (xv)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

This sentence is always true. Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q1 (xvi)

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

This sentence is always false, because $(-1 \times 8 = -8)$. Hence, it is a statement.

Mathematical Reasoning Ex 31.1 Q2

A statement or a proposition is an assertive (or a declarative) sentence which is either true or false but not both.

Example (1):
"Who lost this watch?" is an interrogative sentence. Hence, it is not a statement.

Example (2):
The sentence: $x + 2 = 9$ is an open sentence. Its truth value cannot be confirmed unless we are given the value of x. So, it is not a statement.

Example (3):
The sentence "May god bless you!" is an exclamatory sentence. So, it is not a statement.