Inverse Trigonometric Functions
Part - 1

Assertion-Reasoning MCQs

Directions (Q. Nos. 14-15) Each of these questions contains two statements : Assertion (A) and Reason (R). Each of these questions also has four alternative choices, any one of which is the correct answer. You have to select one of the codes (a), (b), (c) and (d) given below.

(a) A is true, R is true; R is a correct explanation for A.
(b) A is true, R is true; R is not a correct explanation for A.
(c) A is true; R is False.
(d) A is false; R is true.

14. Assertion (A) We can write $\sin^{-1} x = (\sin x)^{-1}$.

Reason (R) Any value in the range of principal value branch is called principal value of that inverse trigonometric function.

15. Assertion (A) The inverse of sine function is define in the interval $[-\pi, 0]$, $[0, \pi]$ etc.

Reason (R) The inverse of sine function is denoted by $\sin^{-1}$.

ANSWER KEY

Assertion-Reasoning MCQs

14. (d) *15. (d)*

SOLUTION

14. **Assertion** $\sin^{-1} x$ should not be confused with $(\sin x)^{-1}$. Infact $(\sin x)^{-1} = \frac{1}{\sin x}$ and similarly for other trigonometric functions.

Reason The value of an inverse trigonometric function which lies in the range of principal branch, is called the principal value of that inverse trigonometric function.

Hence, we can say that Assertion is false and Reason is true.

15. **Assertion** Sine function is one-one and onto in the interval $\left[\frac{-3\pi}{2}, \frac{-\pi}{2}\right], \left[\frac{-\pi}{2}, \frac{\pi}{2}\right], \left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$ etc; and its range is $[-1, 1]$.

So, inverse of sine function is define in each of these intervals.

Reason We denote the inverse of sine function by $\sin^{-1}$ (arc sine function).

Hence, we can say that the Reason is true and Assertion is false.