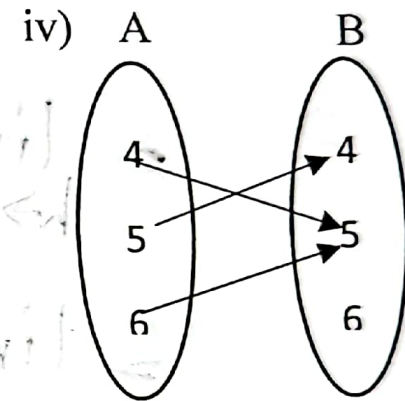
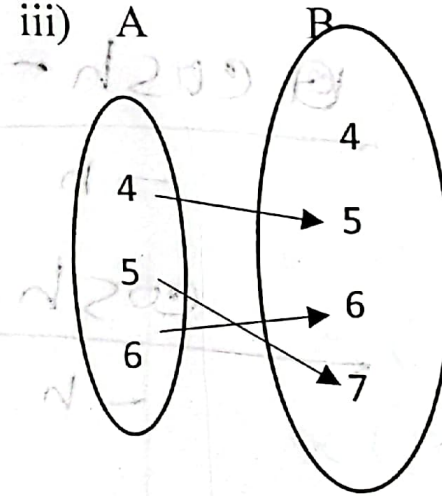
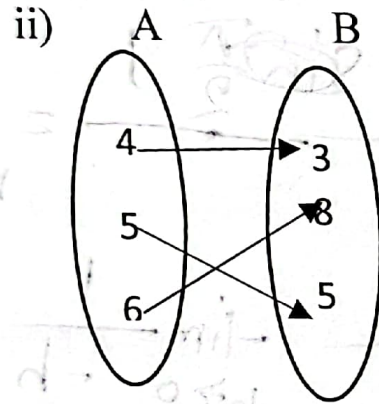
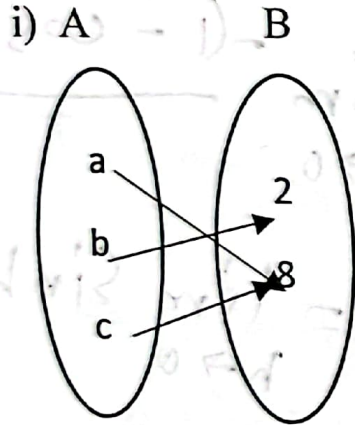


1.(a) If $R = \{(x, a), (y, b), (x, c)\}$ and $S = \{(2, 7), (4, 7), (5, 9), (7, 11)\}$ Which Relation is a Function and why?

(b) Classify the Relation as Injective, Surjective and Bijective Function and Why.

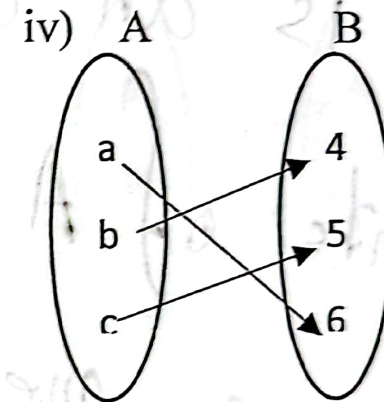
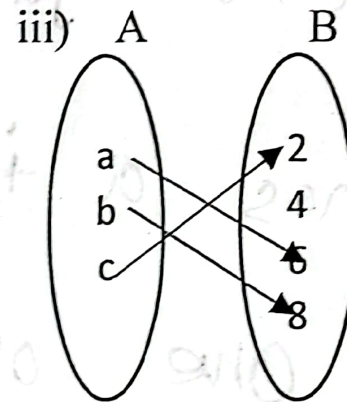
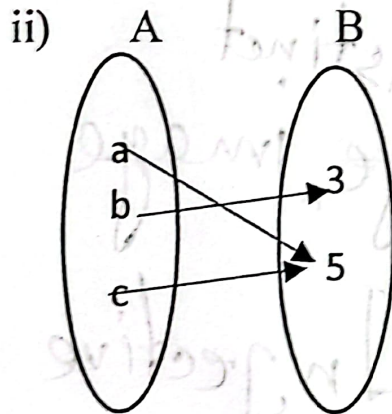
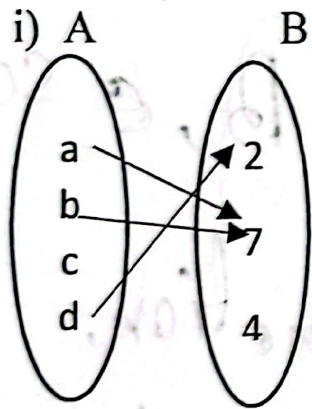


2. Test the Differentiability of $f(x) = \begin{cases} 1 + \cos x; & \text{when } x < 0 \\ 1 + \sin x; & \text{when } 0 \leq x < \frac{\pi}{2} \\ 2 + \left(x - \frac{\pi}{2}\right)^2; & \text{when } x \geq \frac{\pi}{2} \end{cases}$ at $x = \frac{\pi}{2}$

3. Find the solution of the $\frac{x^2 + 7x + 12}{x^3 - 25x} \leq 0$ using sign table.

1.(a) If $R = \{(p, y), (q, z), (r, z)\}$ and $S = \{(3, 7), (4, 8), (7, 9), (7, 11)\}$ Which Relation is a Function and why?

(b) Classify the Relation as Injective, Surjective and Bijective Function and Why.



2. Test the Differentiability of $g(x) = \begin{cases} 1+2x; & -\frac{1}{2} \leq x < 0 \\ 1-2x; & 0 \leq x \leq \frac{1}{2} \\ 2x-1; & x > \frac{1}{2} \end{cases}$ at $x = \frac{1}{2}$

3. Find the solution of the $\frac{x^2 - 2x - 35}{x^3 - 16x^2 + 64x} \geq 0$ using sign table.