Q1:

A: Cheek whether the **Relation R** defined the **set** $A = \{1, 2, 3, 4\}$

$R = \{(a, b) \quad a^2 + b + 1 \geq b^2\}$ is **Reflexive** and **Symmetric** and **Transitive**.

B : Let $(f \circ g)(x) = \frac{3x+4}{x+1}$ and $f(x) = \sqrt{x^2 + 9}$ **Find** $g(x)$.

Q2:

A: Write this in **equality** by using (**absolute value**).

$$-14 \leq 4x + 7 \leq -12$$

B : **Find** the **derivative** this is function by using **defined**.

$$f(x) = \frac{3}{x^2}$$

Q3 :

Is the function defend by:

$$f(x) = \begin{cases} \frac{\frac{2-x-2}{2(x+2)}}{x} & if \quad x < 0 \\ \frac{x-9}{x-3} & if \quad x \geq 0 \end{cases}$$ **Continuous at** $x = 0$

Q1/

Cheek whether the **Relation** **R** defined the **set** $A = \{1, 3, 5, 7\}$

$R = \left\{(a, b) : \frac{a^2+b}{2} = even \text{ عدد زوجي} \right\}$ **Is Reflexive , Symmetric and Transitive.**

Q2/

A/ **If** $f(x) = \sqrt{x-1}$ **and** $g(x) = 4x^2$ **Find** $(f \circ g)(x)$, $(g \circ f)(x)$

B/ **Write the following inequality by using (absolute value)**

$$-6 \leq 2x - 7 \leq 0$$

Q3/

Find the following:

SUP , INF, Max, Min for this set:

$$S = \left\{ 3 - \frac{2n^2+3}{n^2+1} \quad \forall n \in N \right\}$$ **And find If they Bounded or not**

Q4/

Find:

1. $\lim_{x \to \pi} 4\, e^{\sin 2\left(\frac{x}{2}\right)}$

2. $\lim_{x \to -1} \frac{x^2+5x+4}{x^2+2x-8}$

3. $\lim_{x \to \infty} \frac{(1-3x)^2}{4x^2-7}$