

Questions

1. Given $A = [-3, 2)$, $B = (-1, 5)$ and $C = \{x : -4 \leq x \leq 2, x \in R\}$
 - a) Represent A, B and C on a number line
 - b) Hence, find
 - i) $A \cup B$
 - ii) $A \cap B$
2. Given that $z_1 = 1 - 2i$ and $z_2 = 3 + i$. Express $\frac{\bar{z}_1}{z_2}$ in the form of $a + bi$, where a and b are real numbers
3. Evaluate $\frac{1}{3 - \sqrt{5}} - \frac{1}{1 + \sqrt{5}}$
4. Solve
 - a) $\log_2(x^2 + 2) = 1 + \log_2(x + 5)$
 - b) $9^x + 3^{x+2} = 10$
5. Solve the following inequalities
 - a) $3x^2 \geq 5x + 8$
 - b) $\frac{2x+1}{x-1} < 0$

Final Answers:

1. b) i) $[-3, 5)$ ii) $[-3, 2)$
2. $\frac{1}{2} + \frac{1}{2}i$
3. 1
4. a) $x = 4, -2$ b) $x = 0$
5. a) $(-\infty, -1] \cup \left[\frac{8}{3}, \infty\right)$ b) $\left(-\frac{1}{2}, 1\right)$