Simplifying Interval Notation

A.   Simplify the given interval notation.

1) $(-\infty, 2] \cup [-5, \infty)$

Simpliest Form: $(-\infty, \infty)$

2) $[-7, 5] \cup [-3, 3]$

Simpliest Form: $[-7, 5]$

3) $(-\infty, 3) \cup [-7, 5]$

Simpliest Form: $(-\infty, 5]$

4) $(-2, 3] \cup (-4, 0]$

Simpliest Form: $(-4, 3]$

5) $(-\infty, 2] \cup [7, 10) \cup (7, \infty)$

Simpliest Form: $(-\infty, 2] \cup [7, \infty)$

6) $(-\infty, 3) \cup [4, 10] \cup [6, \infty)$

Simpliest Form: $(-\infty, 3) \cup [4, \infty)$

Polynomial Inequality

B.   Give the solution set to the given polynomial inequality.

1) $-(x-1)^2 (x+1)(x+3) > 0$

Solution Set: $(-3, -1)$

2) $-(x-1)(x+1)^3 (x+2) > 0$

Solution Set: $(-\infty, -2) \cup (-1, 1)$

3) $-(x+1)^2(x+2) \geq 0$

6) $(x-1)^2(x+1)(x+2)^2 \leq 0$

Solution Set: $(-\infty, -2] \cup \{-1\}$

Solution Set: $(-\infty, -1] \cup \{1\}$

4) $(x-1)^2(x+1)(x+2)^2 \leq 0$

7) $-(x-1)^2(x+2)^2 > 0$

Solution Set: $(-\infty, -1] \cup \{1\}$

Solution Set: $\emptyset$

5) $-(x+1)^4 \geq 0$

8) $-(x-1)(x+1)^3(x+3) > 0$

Solution Set: $\{-1\}$

Solution Set: $(-\infty, -3) \cup (-1, 1)$