

Practice Problems - Lecture 9b

Problem 1. Solve each rational inequality and write each answer in interval notation:

(a) $\frac{x+1}{x-4} > 0$;

(b) $\frac{3}{x-2} \leq 1$;

(c) $\frac{1}{x+2} \geq 3$.

Problem 2. Solve each absolute value inequality and write each answer in interval notation:

(a) $|3x - 4| < 2$;

(b) $5|x + 1| > 10$;

(c) $|7 - 3x| \leq 4$;

(d) $|-5x + 7| - 4 < -6$;

(e) $|12 - 9x| \geq -12$.

Problem 3. Write the following statements using absolute value notation:

(a) z is no less than 5 units from 4;

(b) k is within 0.0002 unit of 10;

(c) q is no more than 8 units from 22.

Answers:

1. (a) $(-\infty, -1) \cup (4, \infty)$; (b) $(-\infty, 2) \cup [5, \infty)$; (c) $\left(-2, -\frac{5}{3}\right]$.
2. (a) $\left(\frac{2}{3}, 2\right)$; (b) $(-\infty, -3) \cup (1, \infty)$; (c) $\left[1, \frac{11}{3}\right]$; (d) \emptyset ; (e) $(-\infty, \infty)$.
3. (a) $|z - 4| \geq 5$; (b) $|k - 10| < 0.0002$; (c) $|q - 22| \leq 8$.