

Part A Linear Inequalities

1. Solve the following linear inequalities.

Question	Answer
a) $3x + 6 > -3$	$x > -3$
b) $7x \geq 2x + 10$	$x \geq 2$
c) $3(x - 5) \leq 5x - 9$	$x \geq -3$
d) $3(y - 5) \leq 9(y + 1) - 2y$	$y \geq -6$
e) $\frac{x - 2}{3} \leq 2x - 3$	$x \geq \frac{7}{5}$

Part B Quadratic Inequalities

Solve the following quadratic inequalities.

a) $x^2 - 1 > 0$	$x > 1$ or $x < -1$
b) $x^2 - x - 12 < 0$	$-3 < x < 4$
c) $(2x - 3)(x + 4) \geq 0$	$x \geq \frac{3}{2}$ or $x \leq -4$
d) $-3x(x - 5) \leq 0$	$x \leq 0$ or $x \geq 5$
e) $k^2 - 9k \geq 0$	$k \leq 0$ or $k \geq 9$

Extra Practice Questions:

1. Solve the following inequalities and graph the solution on the real number line:

a) $6 - 2x > 4$	b) $4(1 - x) \geq 3(x - 1)$
c) $2(3x - 1) - 5x > -6(1 - x) + 7$	d) $\frac{2x}{3} + 1 \geq 2$
e) $\frac{x + 1}{2} < \frac{x + 2}{3}$	f) $\frac{2 - 3x}{2} + \frac{2}{3} \leq \frac{3x - 2}{6}$

2. Solve the following inequalities and graph the solution on the real number line:

a) $4x^2 + 8x + 3 > 0$	b) $10x^2 - 17x + 3 \leq 0$
c) $2x^2 + 11x + 15 < 0$	d) $8x^2 - 10x - 12 \geq 0$
e) $-6x^2 - 15x - 9 > 0$	f) $12x^2 - 11x + 2 < 0$
g) $-4x^2 + 18x + 10 \leq 0$	

ANSWERS

1a) $x < 1$	b) $x \leq 1$	c) $x < \frac{-3}{5}$
d) $x \geq \frac{3}{2}$	e) $x < 1$	f) $x \geq 1$
2a) $\left\{x < -\frac{3}{2}\right\} \cup \left\{x > -\frac{1}{2}\right\}$	b) $\left\{\frac{1}{5} \leq x \leq \frac{3}{2}\right\}$	c) $\left\{-3 < x < -\frac{5}{2}\right\}$
d) $\left\{x \leq -\frac{3}{4}\right\} \cup \{x \geq 2\}$	e) $\left\{-\frac{3}{2} < x < -1\right\}$	f) $\left\{\frac{1}{4} < x < \frac{2}{3}\right\}$
g) $\left\{x \leq -\frac{1}{2}\right\} \cup \{x \geq 5\}$		