

EXTRA PRACTICE — Exercises

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Unit VI – Second Degree Relations and Higher - Algebraic Fractions Part B – Solving Open Sentences

Lesson 3 – Inequalities - Algebraic Case

Solve each of the following inequalities by considering the range of each factor relative to a number line. Again, note all restricted values and rule out any apparent solutions that are unacceptable.

$$1. \frac{(x+4)(x-1)}{x+3} \geq 0$$

$$2. \frac{x}{x-2} \geq 0$$

$$3. \frac{x-1}{(x-3)(x+4)} < 0$$

$$4. \frac{x-5}{x} < 2$$

$$5. \frac{x-3}{x+4} \geq 2$$

$$6. \frac{1}{x} \leq 2$$

$$7. \frac{x-1}{x-2} > 3$$

$$8. \frac{(x-1)(x+2)}{(x+3)(x-4)} > 0$$

$$9. \frac{5-2x}{4x+3} \leq 0$$

$$10. \frac{x^2 - 11x + 30}{x^2 - 8x + 9} \geq 0$$

EXTRA PRACTICE — Answer Key

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Lesson 3 – Inequalities - Algebraic Case

Solve each of the following inequalities by considering the range of each factor relative to a number line. Again, note all restricted values and rule out any apparent solutions that are unacceptable.

1. $S = \{x \mid -4 \leq x < -3 \text{ or } x \geq 1\}$
Restricted values: $x \neq -3$

2. $S = \{x \mid x \leq 0 \text{ or } x > 2\}$
Restricted values: $x \neq 2$

3. $S = \{x \mid x < -6 \text{ or } 1 < x < 3\}$
Restricted values: $x \neq 3, x \neq -4$

4. $S = \{x \mid x < -5 \text{ or } x > 0\}$
Restricted values: $x \neq 0$

5. $S = \{x \mid -11 \leq x < -4\}$
Restricted values: $x \neq -4$

6. $S = \left\{x \mid x < 0 \text{ or } x \geq \frac{1}{2}\right\}$
Restricted values: $x \neq 0$

7. $S = \left\{x \mid 2 < x < 2\frac{1}{2}\right\}$
Restricted values: $x \neq 2$

8. $S = \{x \mid x < -3 \text{ or } -2 < x < 1 \text{ or } x > 4\}$
Restricted values: $x \neq -3, x \neq 4$

9. $S = \left\{x \mid x < -\frac{3}{4} \text{ or } x \geq \frac{5}{2}\right\}$
Restricted values: $x \neq -\frac{3}{4}$

10. $S = \{x \mid x < 1 \text{ or } 5 \leq x \leq 6 \text{ or } x > 8\}$
Restricted values: $x \neq 1, x \neq 8$