Maths

Solve quadratic inequalities (a > 1)

Miss Parnham

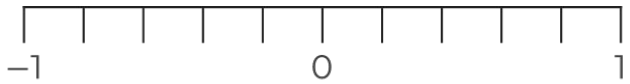
Solve quadratic inequalities (a > 1)

1. a) Solve $6x^2 + x - 2 \geq 0$

$($ $)($ $) \geq 0$

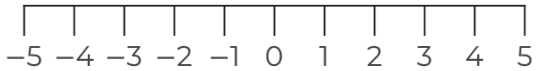
$x <$ _____ $x >$ _____

b) Represent the solution on a number line and using set notation.



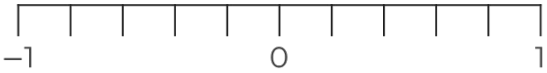
2. Show the solutions to the following inequalities on a number line and using set notation.

a) $4x^2 + 12x + 5 < 0$



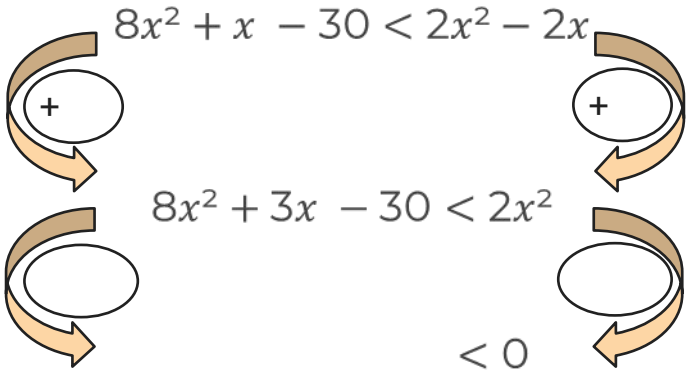
b) $8x^2 + 6x - 9 > 0$

c) $25x^2 - 4 \leq 0$



Solve quadratic inequalities (a > 1)

3. Solve $8x^2 + x - 30 < 2x^2 - 2x$



Represent your answer using set notation.

4. Rearrange and solve

a) $16x^2 + 2x \geq 2x + 9$

b) $10x^2 + 15x \leq 4x + 6$

5. The set of values for x that satisfies a quadratic inequality is

$\{x: x > 4 \cup x < 1\}$

Write down a possible inequality.

Answers

Solve quadratic inequalities (a > 1)

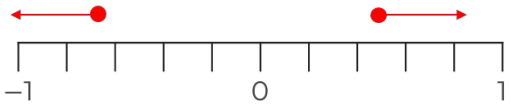
1. a) Solve $6x^2 + x - 2 \geq 0$

$6x^2 + 4x - 3x - 2 \geq 0$

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

$x \leq -\frac{2}{3}$ $\quad$ $x \geq \frac{1}{2}$

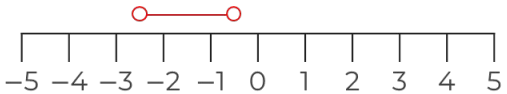
b) Represent the solution on a number line and using set notation.



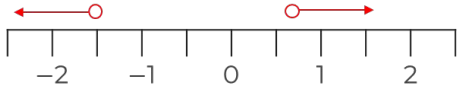
$\left\{x : x \geq \frac{1}{2} \cup x \leq \frac{-2}{3}\right\}$

2. Show the solutions to the following inequalities on a number line and using set notation.

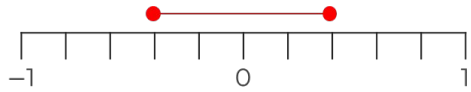
a) $4x^2 + 12x + 5 < 0$ $\{x: -2.5 < x < -0.5\}$



b) $8x^2 + 6x - 9 > 0$ $\{x: x > 0.75 \cup x < -1.5\}$

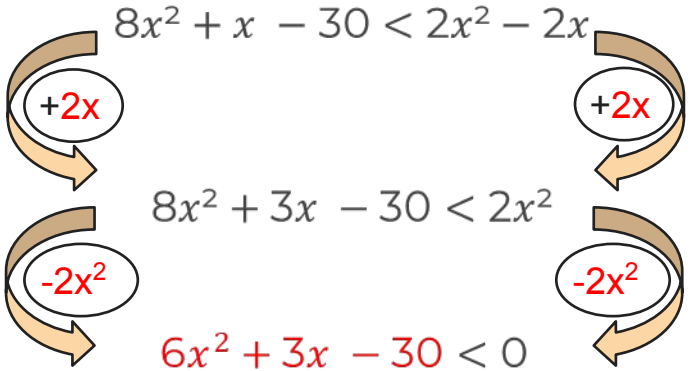


c) $25x^2 - 4 \leq 0$ $\{x: -0.4 \leq x \leq 0.4\}$



Solve quadratic inequalities (a > 1)

3. Solve $8x^2 + x - 30 < 2x^2 - 2x$



$(2x + 5)(3x - 6) < 0$

Represent your answer using set notation. $\{x: -2.5 < x < 0.5\}$

4. Rearrange and solve

a) $16x^2 + 2x \geq 2x + 9$

$16x^2 - 9 \geq 0$

$(4x + 3)(4x - 3) \geq 0$

$\{x: x \geq 0.75 \cup x \leq -0.75\}$

b) $10x^2 + 15x \leq 4x + 6$

$10x^2 + 11x - 6 \leq 0$

$(2x + 3)(5x - 2) \leq 0$

$\{x: -1.5 \leq x \leq 0.4\}$

5. The set of values for x that satisfies a quadratic inequality is

$\{x: x > 4 \cup x < 1\}$ $x^2 - 5x + 4 > 0$

Write down a possible inequality.