

Maths

Solve quadratic inequalities ($a = 1$)

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Solve quadratic inequalities (a = 1)

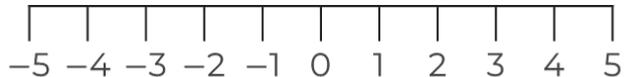
1. a) Solve $x^2 + x - 6 > 0$

$$x^2 + x - 6 > 0$$

$$(\quad)(\quad) > 0$$

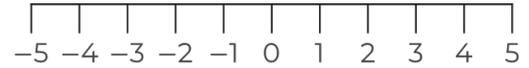
$$x < \quad \quad x > \quad \quad$$

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

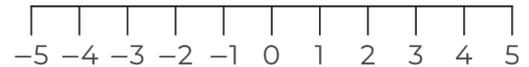


2. Show the solutions to the following inequalities on a number line and using set notation.

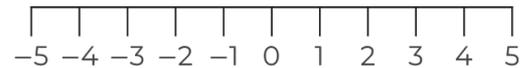
a) $x^2 - 4x \geq 0$



b) $x^2 + 2x - 15 \leq 0$



c) $x^2 + 3x - 4 < 0$

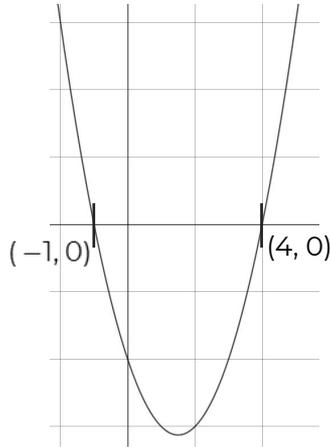


Solve quadratic inequalities (a = 1)

3. Amir is solving quadratic inequalities with the help of a sketch graph.

$$x^2 - 3x - 4 < 0$$

How does the graph help him to see where the solutions lie, and subsequently how to represent on a number line and using set notation?



4. Sketch the graph of $y = x^2 + 4x - 5$
Use the graph to solve

a) $x^2 + 4x - 5 > 0$

b) $x^2 + 4x - 5 \leq 0$

Write solutions in set notation.

5. Explain why $x^2 + 4 < 0$ has no solutions, you may want to draw a sketch graph to help.



Answers



Solve quadratic inequalities (a = 1)

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

$$x^2 + x - 6 > 0$$

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

$$x < \underline{-3} \quad x > \underline{2}$$

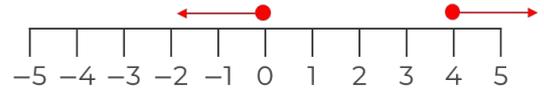
b) Represent the solution on a number line and using set notation.



$$\{x: x > 2 \cup x < -3\}$$

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

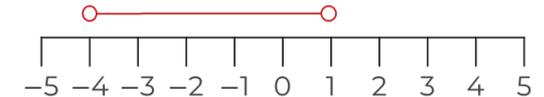
a) $x^2 - 4x \geq 0$ $\{x: x \geq 4 \cup x \leq 0\}$



b) $x^2 + 2x - 15 \leq 0$ $\{x: -5 \leq x \leq 3\}$



c) $x^2 + 3x - 4 < 0$ $\{x: -4 < x < 1\}$

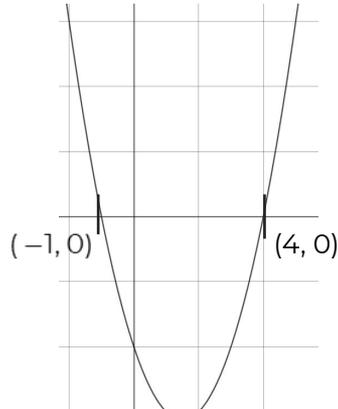


Solve quadratic inequalities (a = 1)

3. Amir is solving quadratic inequalities with the help of a sketch graph.

$$x^2 - 3x - 4 < 0$$

How does the graph help him to see the where the solutions lie, and subsequently how to represent on a number line and using set notation?



If $f(x) > 0$ or $f(x) \geq 0$ region is above x axis
 If $f(x) < 0$ or $f(x) \leq 0$ region is below x axis

4. Sketch the graph of $y = x^2 + 4x - 5$

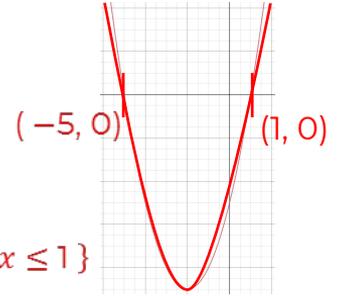
Use the graph to solve

a) $x^2 + 4x - 5 > 0$

$\{x: x > 1 \cup x < -5\}$

b) $x^2 + 4x - 5 \leq 0$ $\{x: -5 \leq x \leq 1\}$

Write solutions in set notation.



5. Explain why $x^2 + 4 < 0$ has no solutions, you may want to draw a sketch graph to help.

Graph does not intersect x axis, so there are no values < 0

