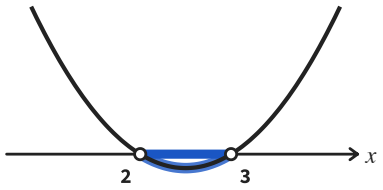
Quadratic Inequalities

ANSWERS

1

Solve $x^2 - 5x + 6 < 0$



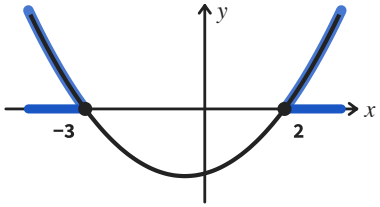
solve: $(x - 2)(x - 3) = 0$

critical values: 2 and 3

Answer $2 < x < 3$

2

Solve $x^2 + x - 6 \geq 0$



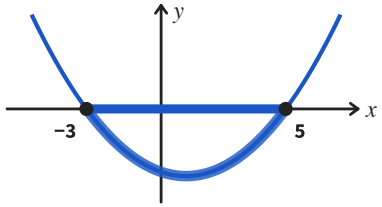
solve: $(x + 3)(x - 2) = 0$

critical values: -3 and 2

Answer $x \leq -3$ or $x \geq 2$

3

Solve $x^2 - 2x - 15 \leq 0$



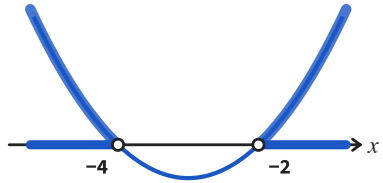
solve: $(x - 5)(x + 3) = 0$

critical values: -3 and 5

Answer $-3 \leq x \leq 5$

4 *Notice the change!*

Solve $x^2 + 6x + 8 > 0$



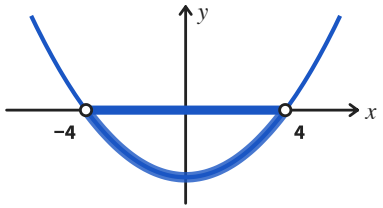
solve: $(x + 2)(x + 4) = 0$

critical values: -4 and -2

Answer $x < -4$ or $x > -2$

5

Solve $x^2 - 16 < 0$



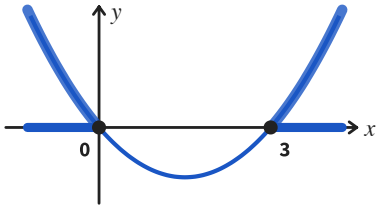
solve: $(x + 4)(x - 4) = 0$

critical values: -4 and 4

Answer $-4 < x < 4$

6

Solve $x^2 - 3x \geq 0$



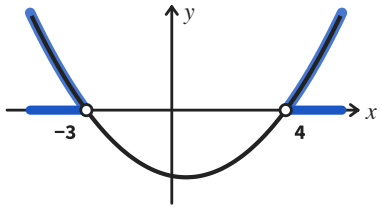
solve: $x(x - 3) = 0$

critical values: 0 and 3

Answer $x \leq 0$ or $x \geq 3$

7

Leo solves $x^2 - x - 12 > 0$ and writes $-3 < x < 4$. Explain his mistake. Then write the right answer.



greater than 0 is above the axis:

the two outside parts

Answer $x < -3$ or $x > 4$

8

Find all the integers that fit $x^2 - x - 6 < 0$.

solve: $(x - 3)(x + 2) = 0$

so $-2 < x < 3$

Integers $-1, 0, 1, 2$

Quadratic Inequalities *further practice*

ANSWERS

9

Solve $x^2 + 3x - 10 \leq 0$.

$(x + 5)(x - 2) = 0$

critical values -5 and 2, in between

Answer $-5 \leq x \leq 2$

10

Solve $x^2 > 9x$.

$x^2 - 9x > 0$, so $x(x - 9) > 0$

critical values 0 and 9, outside

Answer $x < 0$ or $x > 9$

11

Solve $x^2 \geq 49$.

$x^2 - 49 \geq 0$: $(x + 7)(x - 7) \geq 0$

on or above the axis: outside

Answer $x \leq -7$ or $x \geq 7$

12

Solve $x(x + 2) < 15$.

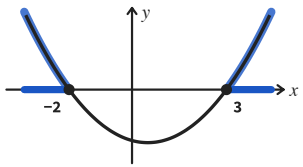
$x^2 + 2x - 15 < 0$

$(x + 5)(x - 3) < 0$, in between

Answer $-5 < x < 3$

13

The sketch shows $y = x^2 - x - 6$.
Use it to solve $x^2 - x - 6 \geq 0$.



on or above the x axis

the two outside parts

Answer $x \leq -2$ or $x \geq 3$

14

How many integers fit
$x^2 - 7x + 6 \leq 0$?

$(x - 1)(x - 6) \leq 0$, so $1 \leq x \leq 6$

1, 2, 3, 4, 5 and 6

Answer 6

15

A rectangle is x cm long and $(x - 3)$ cm wide. Its area is less than 40 cm^2. Find the range of values of x.

$x^2 - 3x - 40 < 0$: $-5 < x < 8$

the width $x - 3 > 0$, so $x > 3$

Answer $3 < x < 8$

16

Mia says $x^2 \leq 4$ means $x \leq 2$.
Give a value of x that shows she is wrong. Write the right answer.

$x = -3$: $-3 \leq 2$, but 9 is not ≤ 4

$(x + 2)(x - 2) \leq 0$, in between

Answer $-2 \leq x \leq 2$