

그래프를 활용한 이차부등식 풀기

(Solving Quadratic Inequalities by Graphing)

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End

Solving Quadratic Inequalities by Graphing

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▶ End

$$D = 2.5$$
A horizontal line representing a number line. A solid black dot is placed on the line, and the text "D = 2.5" is positioned directly above it.

$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbf{R})$$

Solving Quadratic Inequalities by Graphing

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$$\text{---} \bullet \text{---} \quad D = 2.5$$

$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac$$

Solving Quadratic Inequalities by Graphing

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▶ End

$$\text{D} = 2.5$$
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$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac > 0$$

Solving Quadratic Inequalities by Graphing

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▶ End

$$D = 2.5$$


$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

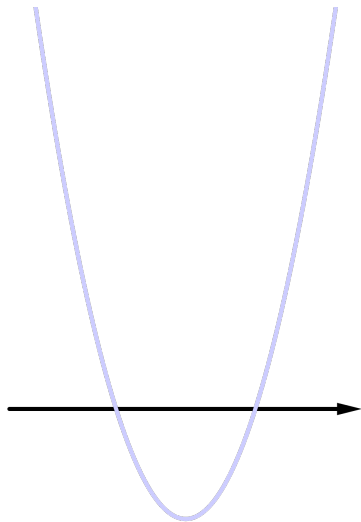
$$D = b^2 - 4ac > 0$$



Solving Quadratic Inequalities by Graphing

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▶ End



$$D = 2.5$$



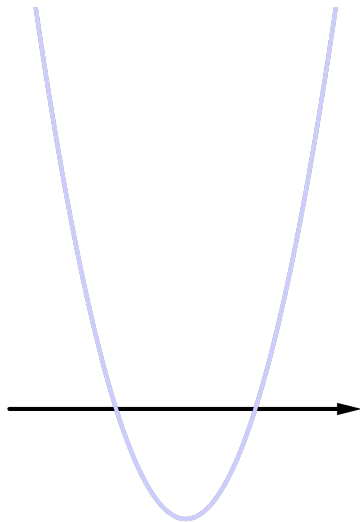
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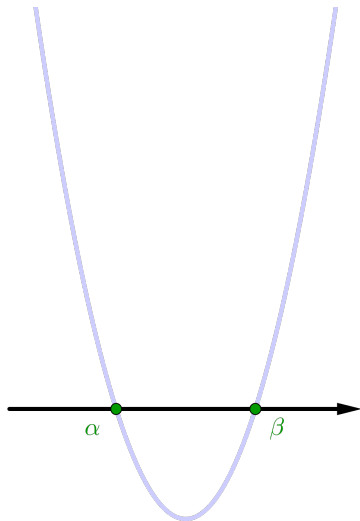
$$D = b^2 - 4ac > 0$$

$$ax^2 + bx + c = 0$$

Solving Quadratic Inequalities by Graphing

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$$D = 2.5$$

A horizontal line with a single point marked by a black dot, representing the discriminant value $D = 2.5$.

$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

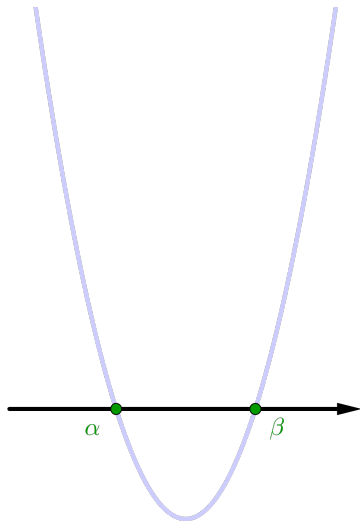
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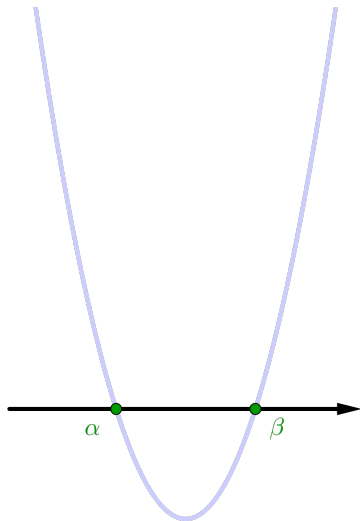
$$ax^2 + bx + c = 0$$

$$x = \alpha, \beta \quad (\alpha < \beta)$$

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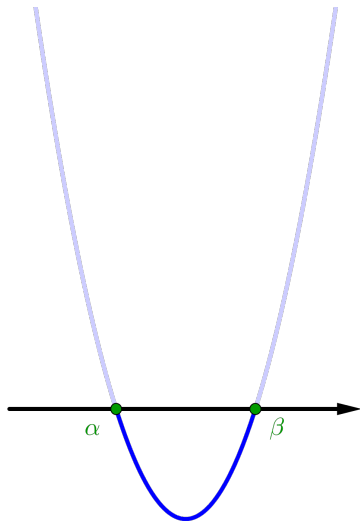
$$x = \alpha, \beta \quad (\alpha < \beta)$$

$$ax^2 + bx + c < 0$$

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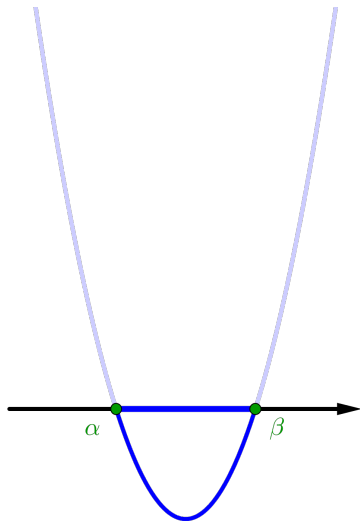
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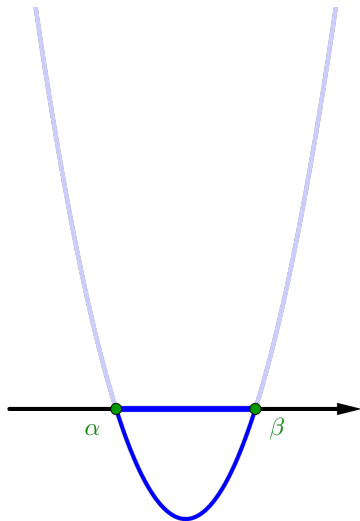
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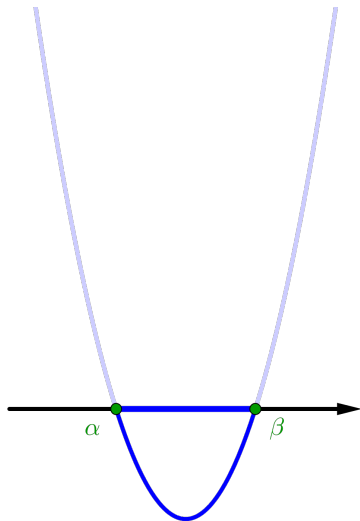
$$ax^2 + bx + c < 0$$

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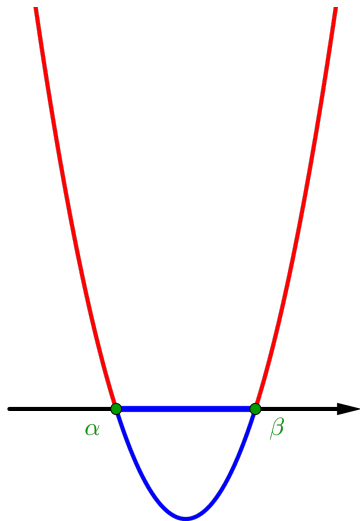
$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

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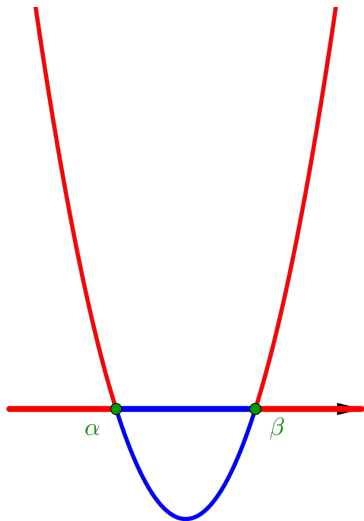
$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta$$

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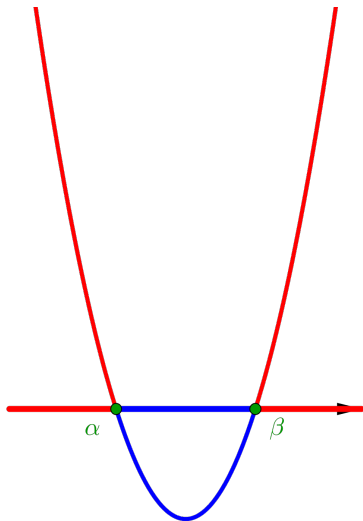
$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta$$

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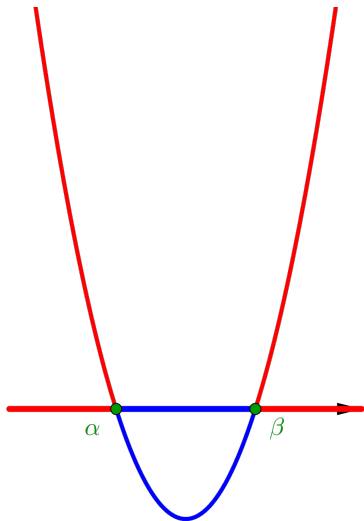
$$\alpha < x < \beta$$

$$x < \alpha \text{ or } x > \beta$$

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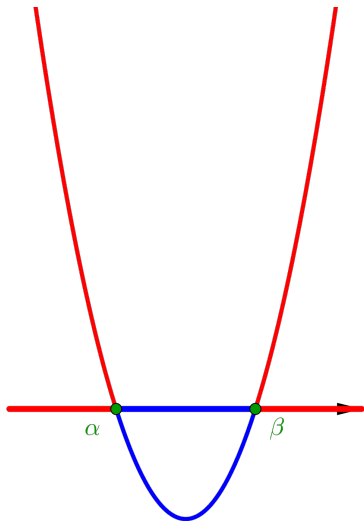
$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

$$ax^2 + bx + c \leq 0$$

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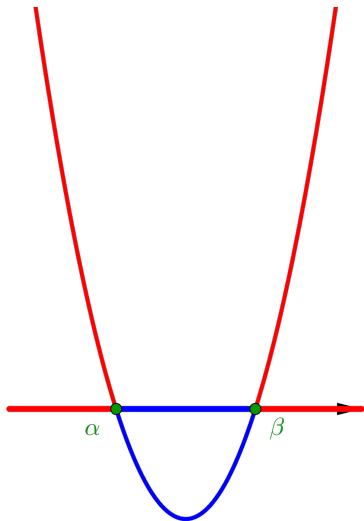
$$ax^2 + bx + c \leq 0$$

$$\alpha \leq x \leq \beta$$

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$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

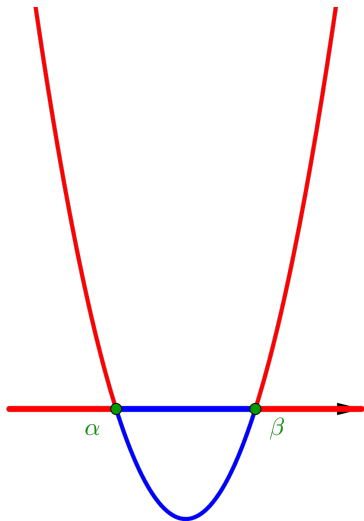
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

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$$x = \alpha, \beta \quad (\alpha < \beta)$$

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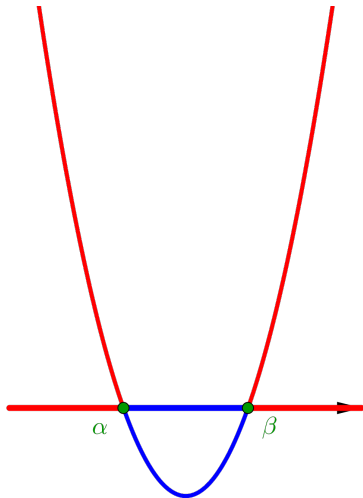
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$\alpha \leq x \leq \beta \quad x \leq \alpha \text{ or } x \geq \beta$$

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = 2$$

$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac > 0$$

$$ax^2 + bx + c = 0$$

$$x = \alpha, \beta \quad (\alpha < \beta)$$

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

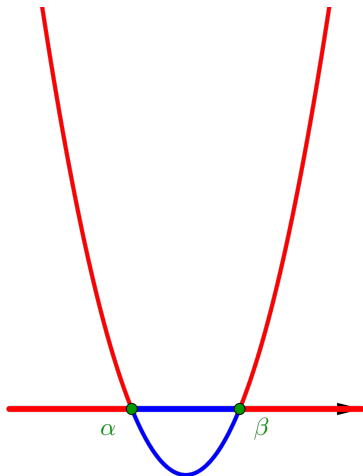
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$\alpha \leq x \leq \beta \quad x \leq \alpha \text{ or } x \geq \beta$$

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = 1.5$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac > 0$$

$$ax^2 + bx + c = 0$$

$$x = \alpha, \beta \quad (\alpha < \beta)$$

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

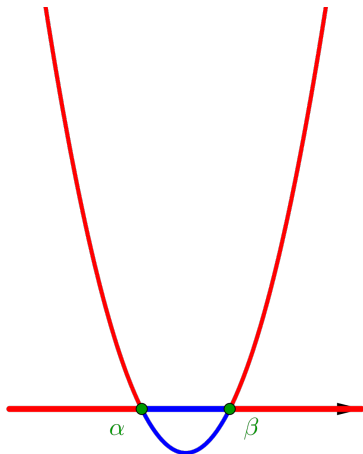
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$\alpha \leq x \leq \beta \quad x \leq \alpha \text{ or } x \geq \beta$$

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = 1$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac > 0$$

$$ax^2 + bx + c = 0$$

$$x = \alpha, \beta \quad (\alpha < \beta)$$

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

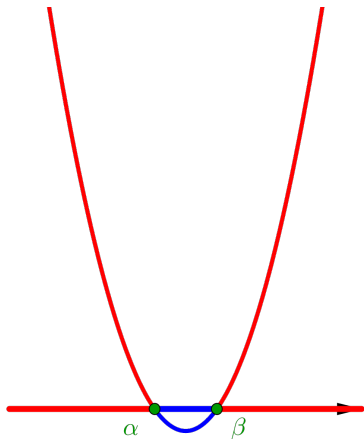
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$\alpha \leq x \leq \beta \quad x \leq \alpha \text{ or } x \geq \beta$$

Solving Quadratic Inequalities by Graphing

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▶ End



$$D = 0.5$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac > 0$$

$$ax^2 + bx + c = 0$$

$$x = \alpha, \beta \quad (\alpha < \beta)$$

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\alpha < x < \beta \quad x < \alpha \text{ or } x > \beta$$

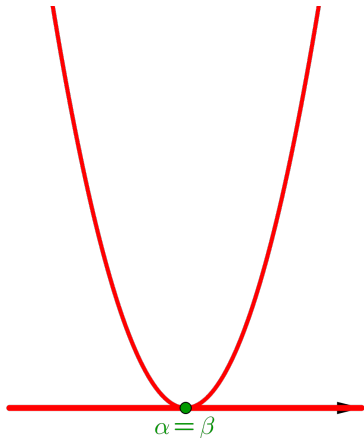
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$\alpha \leq x \leq \beta \quad x \leq \alpha \text{ or } x \geq \beta$$

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = 0$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac = 0$$

$$ax^2 + bx + c = 0$$

$$x = -\frac{b}{2a} = \alpha (= \beta)$$

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

$$\text{No real solutions.} \quad x \neq -\frac{b}{2a}$$

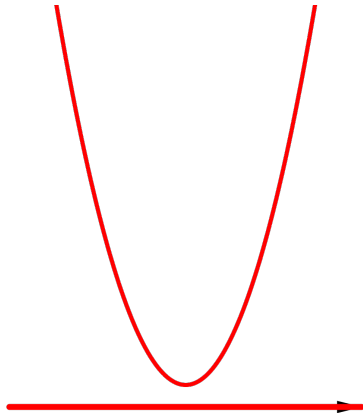
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

$$x = -\frac{b}{2a} \quad \mathbb{R}$$

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = -0.5$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac < 0$$

$$ax^2 + bx + c = 0$$

No real solutions.

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

No real solutions. \mathbb{R}

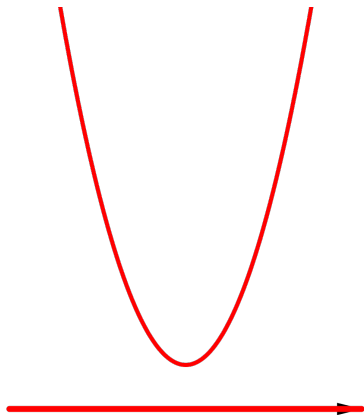
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

No real solutions. \mathbb{R}

Solving Quadratic Inequalities by Graphing

▶ Start

▶ End



$$D = -1$$



$$y = ax^2 + bx + c \quad (a > 0, b, c \in \mathbb{R})$$

$$D = b^2 - 4ac < 0$$

$$ax^2 + bx + c = 0$$

No real solutions.

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

No real solutions. \mathbb{R}

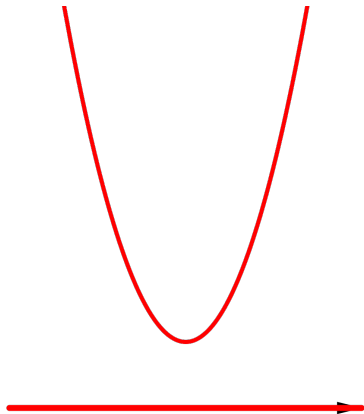
$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

No real solutions. \mathbb{R}

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$$D = b^2 - 4ac < 0$$

$$ax^2 + bx + c = 0$$

No real solutions.

$$ax^2 + bx + c < 0 \quad ax^2 + bx + c > 0$$

No real solutions. \mathbb{R}

$$ax^2 + bx + c \leq 0 \quad ax^2 + bx + c \geq 0$$

No real solutions. \mathbb{R}

Github:

<https://min7014.github.io/math20210522001.html>

Click or paste URL into the URL search bar,
and you can see a picture moving.