

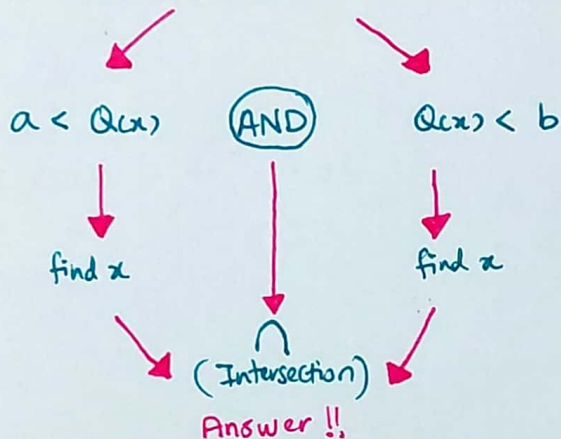
① Quadratic Inequalities (FGA)

$$\begin{aligned} ax^2 + bx + c &> 0 \\ &< 0 \\ &\geq 0 \\ &\leq 0 \end{aligned}$$

Advise:
a is +ve,
graph's shape \cup

② Double Inequalities

$$a < Q(x) < b$$



③ Ratio Inequalities (FANSPA)

$$\begin{aligned} \frac{P(x)}{Q(x)} &> 0 \\ &< 0 \\ &\geq 0 \\ &\leq 0 \end{aligned}$$

LHS
(single fraction)

RHS
(zero)

P(x) & Q(x) are
linear or quadratic
Ex: $\frac{2x^2 + 3x + 1}{5 - x} \geq 0$

④ Absolute Value (Equation)

$$(i) \quad |Q(x)| = a$$

$$Q(x) = -a \quad \text{or} \quad Q(x) = +a$$

$$(ii) \quad |Q(x)| = |P(x)|$$

$$(Q(x))^2 = (P(x))^2$$

⑤ Absolute Value (Inequalities)

$$(i) \quad |Q(x)| < a$$

case
<
≤

$$-a < Q(x) < a$$

$$-a < Q(x) \quad \text{AND} \quad Q(x) < a$$

$$(ii) \quad |Q(x)| > a$$

case
>
≥

$$-a > Q(x) \quad \text{OR} \quad Q(x) > a$$

$$(iii) \quad |Q(x)| > |P(x)|$$

case
<
≤
>
≥

$$(Q(x))^2 > (P(x))^2$$

$$(iv) \quad \left| \frac{P(x)}{Q(x)} \right| < a$$

case
<
≤
>
≥

$$|P(x)| < a |Q(x)|, \quad Q(x) \neq 0$$

$$(P(x))^2 < (aQ(x))^2$$

⋮