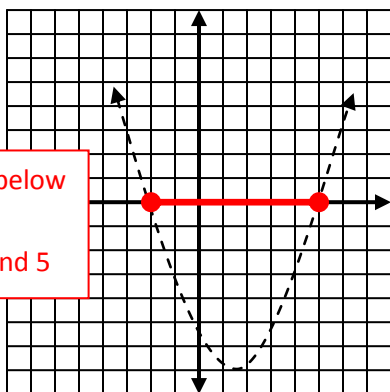


SOLVING QUADRATIC INEQUALITIES

GRAPHING METHOD: simply find the x-values for which the graph is:

Above the x-axis for "greater than" OR below the x-axis for "less than".

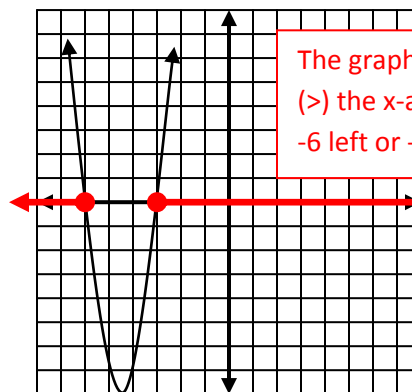
1) $x^2 - 3x - 10 < 0$



The graph is below (<) the x-axis between -2 and 5

Solution: $-2 < x < 5$

2) $x^2 + 9x + 18 \geq 0$



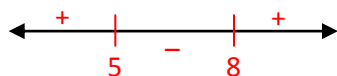
The graph is above (>) the x-axis from -6 left or -3 right

Solution: $x \leq -6$ or $x \geq -3$

ALGEBRAIC METHOD (factoring, complete the square, quadratic formula): solve the related equation, then **TEST** values above, below and in between the solutions.

3) $x^2 - 13x + 40 < 0$

factor: $(x - 8)(x - 5) < 0$
 $x = 8, x = 5$

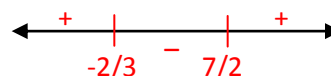


Solution: $5 < x < 8$

Test +4, +6, +9
 $(4-8)(4-5) = +4$
 $(6-8)(6-5) = -2$
 $(9-8)(9-5) = +4$
so, the graph is above the axis left of 5 or right of 8 and below it between them

4) $6x^2 - 17x \geq 14$

$6x^2 - 17x - 14 \geq 0$
 $(3x + 2)(2x - 7) \geq 0$
 $x = -2/3, x = 7/2$

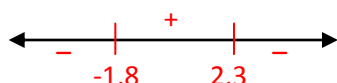


Solution: $x \leq -2/3$ or $x \geq 7/2$

Test -1, 0, 4
plug in -1, get +
plug in 0, get -
plug in 4, get +

5) $-2n^2 + n + 8 \geq 0$

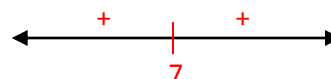
quad program:
 $n \approx -1.8, n \approx 2.3$



Solution: $-1.8 \leq n \leq 2.3$

6) $y^2 + 49 < 14y$

$y^2 - 14y + 49 < 0$
 $(y - 7)(y - 7) < 0$
 $y = 7$



Solution: \emptyset