

Polynomial and Rational Inequalities:

To solve a polynomial or rational inequality, just do the following steps:

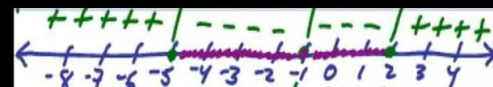
1. Get zero on one side.

2. Create the sign chart for the other side.

3. Read the solution from the sign chart.

Polynomial Inequality

$$(x+1)^2(x-2)(x+5) \leq 0$$



Solve using a Sign Chart

Rational Inequality

$$\frac{(x+2)^2}{x^2-6x+5} > 0$$



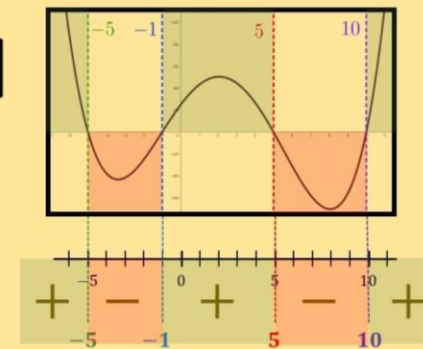
Solve using a Sign Chart

Examples:

1. $(x-5)(x+2)^2 > 0$

2. $x^3 + 8x^2 < 0$

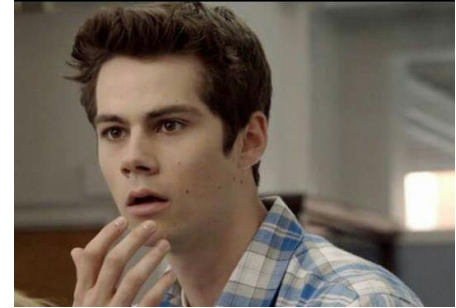
Polynomial
+ Sign
- Chart



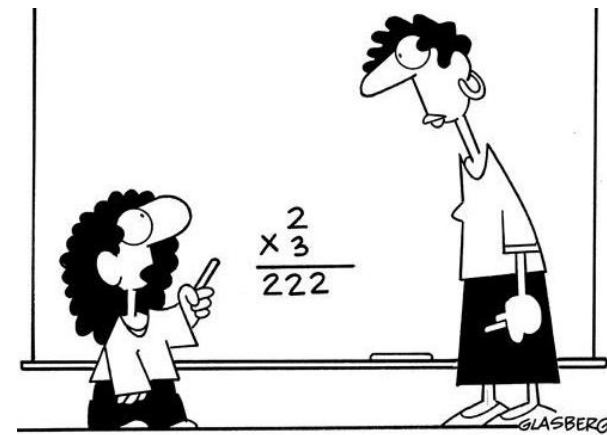
$$3. \quad x^3 + 2x^2 - 3x \geq 0$$

$$4. \quad x^4 \leq 9x^2$$

**When the whole class is fighting
over whether the answer is 17 or 18
but you got 157**



5. $x^2 + 4 \leq 4x$

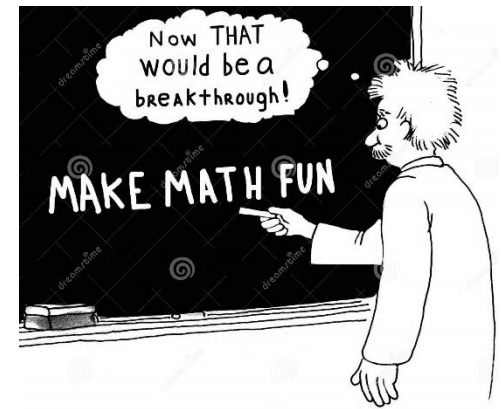


"What do you mean, it's the wrong kind of right?"

6. $x^2 - 4x \leq -2$

$$7. x^2 - 4x + 5 < 0$$

$$8. \frac{x-3}{x+1} > 0$$



$$9. \frac{(x-2)^2}{x^2-1} \geq 0$$

$$10. \frac{x+4}{x-2} \leq 1$$



11. $\frac{5}{x-3} > \frac{3}{x+1}$

12. $\frac{1}{x-2} < \frac{2}{3x-9}$

