POLYNOMIAL FUNCTION INEQUALITY:

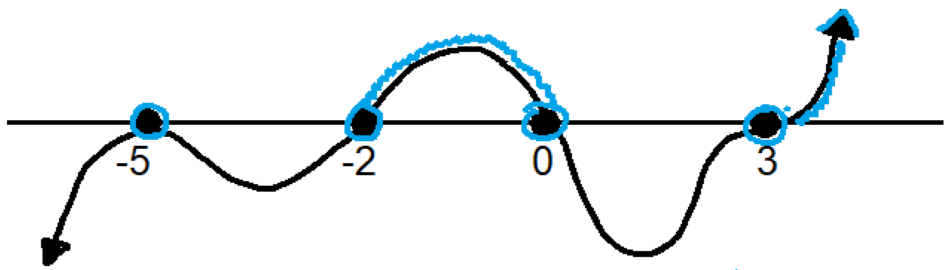
$$f(x) = A(x+5)^2(x+2)(x)(x-3)^3,\ \ A>0$$

Determine end behavior from 7th degree with A>0.

Sketch a graph.

Solve $f(x) \ge 0.$

State x-intervals for which $f(x) \ge 0$.



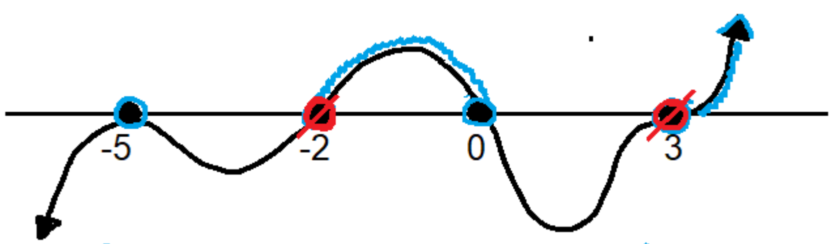
for $x \in -5, [-2,0], [3,\infty)$

RATIONAL FUNCTION INEQUALITY:

$$g(x) = \frac{A(x+5)^2(x)}{(x+2)(x-3)^3},\ \ A>0$$

Solve g(x) inequality using the related polynomial function f(x) (the same one from up above) & the polynomial graph.

State x-intervals for which $f(x) \ge 0$.



for $x \in -5, [-2,0], [3,\infty)$

$g(x) = \frac{A(x+5)^2(x)}{(x+2)(x-3)^3}$

f(x) is the "related polynomial" for rational function g(x).

$f(x) = A(x+5)^2(x+2)(x)(x-3)^3$

For rational function g(x), $x \neq -2, 3$ b/c these values cause division by zero. But for all other x-values, g(x) will be positive when f(x) is positive

So $g(x) \ge 0$ for $x \in -5, (-2,0], (3,\infty)$

Compare this interval to the solution for $f(x) \ge 0$! What is the difference?